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COLEOPTERA

LAMELLICORNIA

PART II.

(RUTELINÆ, DESMONYCINÆ, AND EUCHIRINÆ)

BY

G. J. ARROW.

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PREFACE.

Although issued in the midst of the great European struggle, the chief part of the work represented by this volume was accomplished in more peaceful days when labourers in the various fields of science still worked throughout Europe in friendly co-operation and the war existed only in the programmes of German political ambition. Thanks to such co-operation I have had the great advantage of being able to examine the types of most of the previously-known Indian species figuring here. As before, the names of those of which a type or co-type has been examined are marked with an asterisk.

Many of these types are in the British Museum, but for the loan of the rest I am indebted to the willing help of the many friends who, at my request, have submitted them for my examination with invariable courtesy and kindness. I wish to place on record my grateful thanks to M. Pierre Lesne, who has enabled me to examine the numerous types of Blanchard and Fairmaire in the Paris Museum; M. René Oberthür, who has sent me the types of Bates in his own collection; M. Severin, for those of Candèze in the Brussels Museum; Dr. Frey-Gessner, of the Geneva Museum, for the loan of several types of Burmeister contained in that collection; Professor Poulton, for lending me those of Hope, Newman and Westwood in the Oxford Museum; Mr. F. H. Gravely for those of Brenske in the Indian Museum, Calcutta: the late Dr. L. Ganglbauer, for the

Redtenbacher types in the Vienna Museum; Dr. O. Taschenberg, for several of Burmeister's types in the Halle Museum; Herr Schenkling, for those of Kraatz in the Berlin Entomological Museum; Captain Moser, for types of Brenske in his possession; and Dr. Ohaus, for some of those described by himself.

Amongst those who have contributed other valuable materials for the work I must especially mention Dr. R. Gestro, Director of the Genoa Civic Museum, whose equally valuable assistance with my previous volume I accidentally omitted to acknowledge, and who not only contributed the most important collection of RUTELINÆ which has yet been made in Burma (that of the late Leonardo Fea), but also supplied the coloured figure reproduced in the frontispiece of the unique type of *Dicaulocephalus feæ*, Gestro.

Mr. F. H. Gravely, of the Indian Museum, Mr. T. Bainbrigge Fletcher, of the Agricultural Research Institute, Pusa, Mr. E. E. Green, late Government Entomologist in Ceylon, and his successors, the late Mr. Rutherford and Mr. G. M. Henry, Mr. C. F. C. Beeson, of the Forest Research Institute, Dehra Dun, Mr. E. A. D'Abreu, of the Nagpur Central Museum, Mr. E. Ballard, Government Entomologist for Madras, have all assisted by sending collections belonging to their various institutions and increased by their personal exertions. Mr. H. E. Andrewes' large and important collection has again been of the greatest value; and the following gentlemen have all aided by collecting for me in different parts of India: the late Mr. W. K. Webb, Mr. H. Stevens, Capt. A. K. Wld-Downing, Mr. C. F. S. Baker and Mr. F. M. Mackwood.

More than to any other single individual I am indebted to Dr. Adam Böving, of the United States National Museum, for the exceptional kindness with which he copied for me in America both letterpress and illustrations of an important memoir published in Germany shortly before the outbreak of war, which would otherwise have been inaccessible to

me. It may perhaps be well to mention here that, owing to the complete severance of communication between Great Britain and the enemy countries since the beginning of hostilities, I have no knowledge of any literature which may have appeared in the latter countries during the past two years and a half.

In conclusion, I must acknowledge my obligation to Dr. G. A. K. Marshall for the punctilious care which he has devoted to the preparation of my manuscript for the press and the detection of errors and discrepancies, to Mr. Horace Knight for the great pains he has bestowed upon securing the accuracy, as well as the artistic finish, of the illustrations, and, lastly, to my wife for relieving me of much of the more mechanical part of my work.

G. J. ARROW.

March, 1917.

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INTRODUCTION.

Family SCARABŒIDÆ.

Subfamily RUTELINÆ.

The name Rutelidæ was first used by Macleay in 1819 ('Horæ Entomologicæ') for the characteristic American genera (*Rutela*, *Pelidnota*, etc.) of the group as now understood, but Macleay did not recognize as closely related to these the Oriental forms here dealt with, which he considered as belonging to the Melolonthidæ. The first recognition of the actual limits and components of the group is to be found in Burmeister's 'Handbuch der Entomologie,' vol. iv, pt. 1 (1844). In this work, the most important treatise of which the Lamellicorn beetles have ever been the subject, this great entomologist elaborated a complete classification of the group, under the name of *Phyllophaga metallica*, which is in all essentials the classification in use at the present time. Lacordaire, in vol. iii of his 'Genera des Coléoptères,' made a few minor improvements and in particular introduced a more convenient nomenclature, and the system of classification as then formulated has not since been superseded or modified in any important respect. In recent years Dr. Ohaus has published a revision of the Adoretini and of various other subdivisions of the Rutelinæ, in which the number of known species has been largely increased, but his attention has been devoted less to the Oriental members than to those of certain other regions. The writer of the present volume has published, in the 'Annals and Magazine of Natural History,' various short papers designed to bring up to date the enumeration of the species known from Ceylon, Burma, and other parts of the Indian Empire.

The Rutelinæ form a branch of the huge Family Scarabæidæ, not separated by any profound difference either in structure or habits from the Dynastinæ on the one hand and from the Melolonthinæ on the other. With the Dynastinæ in particular there is the closest relationship, certain genera standing practically on the border-line. The most important features for the separation of Rutelinæ from Dynastinæ are the mobile and unsymmetrical claws, the larger one of which upon some (but rarely all) of the legs is usually cleft at the tip, and the well-developed and externally-visible labrum. In the Dynastinæ the claws are

symmetrical, scarcely capable of movement and not cleft, except upon the front feet of certain males. The labrum of the DYNASTINÆ is reduced to a thin membrane in the roof of the mouth and is not visible without removal of the jaws. The forms which connect the two subfamilies are natives of Australia and Tropical America, which areas, directly connected in early Tertiary times, may probably be regarded as representing the place of origin of both groups.

In his great work on the classification of the Coleoptera ('Genera des Coléoptères'), Lacordaire gave as the only rigorously distinctive character of the RUTELINÆ "les trois dernières paires de stigmates abdominaux divergeant fortement en dehors," in contradistinction to the MELOLONTHINÆ in which those spiracles are "divergeant faiblement de dedans en dehors." This antithesis, first enunciated by Erichson in his 'Naturgeschichte der Insecten Deutschlands,' has since been repeated by various eminent authorities without explanation, although Sharp, in the Cambridge Natural History, has altered the formula to "abdominal spiracles placed almost in a line" (MELOLONTHINÆ) and "abdominal spiracles placed in two lines" (RUTELINÆ). In both forms the exact meaning of the phrases is difficult to grasp, even when actual specimens are compared. The meaning I believe to be, as I have expressed it in my previous volume, that in the RUTELINÆ the posterior spiracles of the two sides are placed in two strongly diverging lines, while in the MELOLONTHINÆ they form scarcely diverging lines. Attempts to apply this generalisation have proved unsuccessful, and I have been obliged to abandon it as of no real value. Many differences occur in the position and relative sizes of the spiracles, but these do not indicate any natural line of cleavage, as supposed by Erichson and his successors. For many genera the formulæ given above are correct, but they are certainly not of general application. In the Ruteline genus *Lagochile*, for instance, the spiracles are almost in a straight line, while in *Hoplia* the line formed by them bends outwards as strongly as in any Ruteline I have examined. It is doubtful whether Lacordaire's criterion has ever served for the actual resolution of any doubtful case, and probably the great authority rightly attached to his name is the chief reason for the long-continued repetition of a useless formula.

The structure of the claws is really sufficient to distinguish the RUTELINÆ, not only from the DYNASTINÆ but from all other related groups. In the typical MELOLONTHINÆ the claws are all alike, quite symmetrical on each foot, and not separately, if at all, movable. In rare instances (e. g. *Cyphonoxia*) there is asymmetry, but not inequality in length, in those of the male and in a few cases (e. g. *Plectris*) there is a slight inequality in each pair of claws, but (unlike any Ruteline) the shorter claw is cleft like the longer. The HOPLIINÆ have sometimes, like the RUTELINÆ, very mobile and dissimilar claws, one claw in some cases having disappeared altogether from the hinder pairs of legs, but here again both, if any, are cleft. This group, however, is so distinct

and easily defined that it offers no real difficulty. In the claws of the Rutelinæ, the outer one upon the fore feet and the inner one upon the remaining feet (or, in other words, the posterior claws of all the feet, if the latter are imagined as held at right angles to the axis of the body) are always smaller than the rest and always quite simple in form, while the longer one may be cleft at the tip, lobed beneath, or distorted in shape.

The existence of isolated and aberrant forms always renders difficult the effort to find differential characters of universal application to large aggregates of species, and where the real affinities of such forms are uncertain it is better to separate them than to force them arbitrarily into the great groups. *Propomacrus* (or *Euchirus*) and *Desmonyx* are peculiar Indian genera, having relationships more or less indefinite with the Rutelinæ, but not according with any of the four great groups of Pleurostict Lamellicornia as given in the Table on p. 23 of my previous volume. I have treated each of these as belonging to a separate subfamily.

The following amplified Table will show the relationship of the Rutelinæ to the other subfamilies of Pleurosticts occurring in the Indian region.

Labrum membranous, not visible externally.	
Mandibles not visible externally; front coxæ vertical	Cetoniinæ.
Mandibles visible externally; front coxæ transverse	Dynastinæ.
Labrum thick, more or less exposed.	
Labrum (and maxillæ) degenerate, scarcely chitinous	Desmonychinæ.
Labrum well-developed.	
6th ventral segment not retractile.	
Claws unequal, separately movable, the shorter one always undivided	Rutelinæ.
Claws equal (or if unequal, both cleft) and not separately movable.	
External lamellæ of the antennal club enclosing the middle one	Euchirinæ.
External lamellæ of the antennal club not enclosing the middle one	Melolonthinæ.
6th ventral segment retractile	Hopliinæ.

Structure.

None of the Rutelinæ approach the size of the largest Dynastinæ and Cetoniinæ, few of them exceeding an inch in length, and the external skeleton is generally less hard than in these neighbouring subfamilies, from which results a rather greater inconstancy of form. The remarkable outgrowths of head and thorax seen in many of the Dynastinæ and a few Cetoniinæ are not found in the present group, except in the very singular Indian form *Peperonota*, the male of which has a curious prolongation backwards of the thorax. But in several genera nearly related to that there is an enormous enlargement

of the mandibles in the males—like that so characteristic of the Stag-beetles. The organs of the mouth do not differ essentially from those of the DYNASTINÆ, but the labrum is more developed and is sometimes produced in a vertical direction to meet the labium. This process has advanced to such a degree in the genus *Adoretus* that the mouth is completely divided and the ends of the

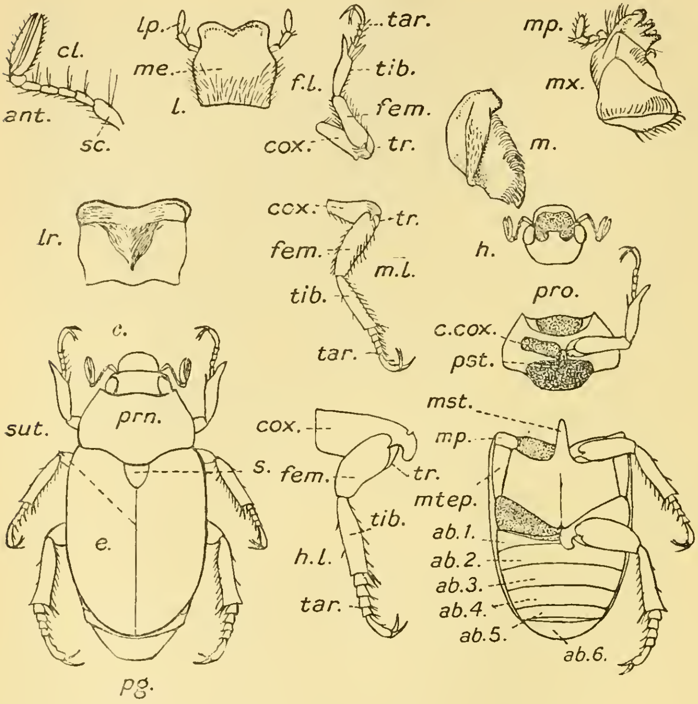


Fig. 1.—*Mimela macleayana* and enlarged details:—*h.*, head; *c.*, clypeus; *pro.*, prothorax; *prn.*, pronotum; *pst.*, prosternum; *mst.*, mesosternum; *mp.*, mesothoracic epimeron; *mtep.*, metathoracic episternum; *s.*, scutellum; *c.cox.*, coxal cavity; *ab.*, abdominal segment; *pg.*, pygidium; *e.*, elytron, *sut.*, elytral suture; *f.l.*, fore leg; *m.l.*, middle leg; *h.l.*, hind leg; *cox.*, coxa; *tr.*, trochanter; *fem.*, femur; *tib.*, tibia; *tar.*, tarsus; *ant.*, antennæ; *sc.*, scape; *cl.*, club; *m.*, mandible; *mx.*, maxilla; *mp.*, maxillary palpus; *lr.*, labrum; *l.*, labium; *me.*, mentum; *lp.*, labial palpus.

mandibles are unable to meet and instead work one against each side of the process, the sides of which are sharply toothed or ridged. Except in the PARASTASIINI, to which belong the species just referred to with enlarged mandibles in the male, and the allied RUTELINI in America, the mandibles in the resting position

are not visible from above, being covered by the clypeus, and are short, stout, and simple in form. The maxillæ are strong biting organs furnished with a number of sharp teeth or cutting blades. The labium is solid and strongly chitinised. The clypeus is generally well-developed, with rounded and upturned edge, but in a few cases it is produced into a narrow snout, as in *Tropiorrhynchus*, *Rhinyptia* and *Adorrhinyptia*. The eyes are often rather large, and in many of the ADORETINI and some species of *Anomala* (probably nocturnal in their habits) they are very large indeed, especially in the males. The antennæ consist of 10, or in a great many cases of 9 joints, with a club of invariably three joints of equal size.

The head, prothorax, and hind-body are very closely fitted together, the first deeply sunk into the second, and the base of the pronotum generally having either an emargination corresponding to the front of the scutellum (e. g. *Popillia*) or a slight lobe by which the latter is more or less overlapped. In the Oriental RUTELINÆ the scutellum is never of very large size, as in some American genera.

Legs.—The legs are formed as in the DYNASTINÆ. The front coxæ are very prominent and contiguous, but the prosternum may be elevated behind them, and in the genus *Mimela* the process so formed is bent forward at a right angle, hiding the junction and appearing as though interposed between them. The middle coxæ are usually also in contact, but in some species of various genera (*Anomala*, *Mimela*, *Parastasia*, etc.) the mesosternum is produced between them, sometimes forming a long pointed process. Although the difference in the configuration of the lower surface of the body according as such a process is present or absent appears considerable, the form of the mesosternum seems to have little real significance from the point of view of classification, being found in all degrees of development in species closely related, while a process of practically identical form may appear independently in widely separated genera, as it appears also in the CETONIINÆ and MELOLONTHINÆ.

The femora undergo no important changes of form. Occasionally the hind femur of the male bears a tooth at its posterior edge, but this occurs only in one Indian species known to me, viz. *Anomala armata*. Sometimes also the hind trochanters are produced in the form of spines (*Tropiorrhynchus podagricus* and *Anomala trochanterica*). In certain American genera belonging to different groups of RUTELINÆ (*Macraspis*, *Geniates*) the femora bear well-developed organs for producing sound by rubbing against the sides of the body, but nothing of the kind has been found in any Oriental representative, or indeed in any part of the world except Tropical America.

The front tibia is armed at its outer edge with one, two, or three teeth, but there are never more than three, although in some species of *Adoretus* the upper part is finely serrated above the teeth or even between them. The single articulated spine

near the base of the front tarsus, normally present in all Lamellicornia, is lost in *Anoplanomala*. The middle and hind tibiæ are fringed externally at the end with short rigid spines, in addition to the two larger terminal spines at the inner edge of each. There are also almost always two rows of spines crossing obliquely the outer face of each of the four posterior tibiæ. The structure of the legs in fact is very constant, although their actual contour varies very considerably. The hind tibiæ, for instance, may be very slender and taper at each end, or they may be extremely short and triangular with their widest part at the extremity, but, although for distinguishing the species it is important to observe carefully the exact shape of these members, every gradation is found in the same genus and some difference is frequent in the two sexes of the same species.

The tarsi are slender and loosely articulated, except in the Parastasiini, in which they are closely articulated and comparatively short. No reduction occurs in the number (five) of joints as in the Cetoniinæ and other subfamilies. The posterior edge of each joint is drawn out beneath into short processes, usually two in number, and these alternate with very stout articulated but immovable spines, which are evidently important aids to progression. In the Parastasiini these accessory structures seem of less importance and the basal joints are not produced beneath, but the penultimate joint is drawn out into a single strong process. n addition to the locomotory spines referred to there are other more slender spines and hairs, and in particular a pair at the end of the penultimate joint and two pairs at the end of the claw joint which are very long and delicate, the latter radiating outwards as a kind of circlet around the base of the claws, and as long as, or even longer than, the claws themselves (see *Anomala ciliatipes*). These delicate organs are no doubt the terminals of sensory nerves and provide the highly chitinous extremities with the sense of touch. This is presumably also the function of the pulvillus (or onychium), the finger-like structure which arises between and a little in front of the claws and bears at its extremity a pair of fine hairs, sometimes diverging strongly and sometimes in close apposition, so that they look like a single hair.

In the Rutelinæ the claws assume a greater variety and importance for systematic purposes than in any other group, except perhaps the Melolonthinæ and Hopliinæ. The two claws are always of unequal length, freely movable and capable of being folded close against the foot, a faculty which, at least in the four posterior legs, is not attained in any allied group. This is an adaptation for an existence amongst foliage and perhaps of special use in clinging to the edges of leaves. In those Lamellicornia, like the Coprinæ and Geotrupinæ, which crawl upon the ground, the claws are always simple, symmetrical and immovable, and this is also the case in those which are found upon trees and flowers, but not upon foliage, as in the Lucanidæ, Passalidæ,

and CETONIINÆ. The present subfamily and the MELOLONTHINÆ and HOPLIINÆ are the pre-eminently leaf-feeding groups of Lamellicornia, and in these, although in different ways, we find a special tendency to depart from the primitive simple form of claw-structure. In the MELOLONTHINÆ and HOPLIINÆ an even more highly modified structure may be observed, but the great mobility found in the Ruteline claw does not occur there and, with a few exceptions, the claws of all the feet are alike. In the present group those of the first, second, and third pairs of legs

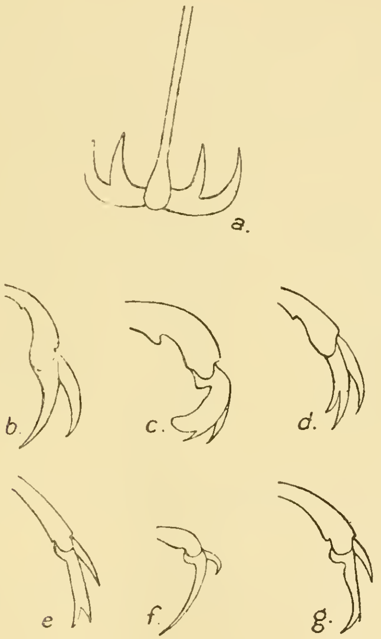


Fig. 2.—Tarsal claws:—*a*, claws of *Propomacrus* (Euchirinæ); *b*, hind claws of *Anomala dorsalis*; *c*, front claws of *Anomala dorsalis*, male; *d*, ditto, female; *e*, front claws of *Adoretus suturalis*, female; *f*, hind claws of *Adoretus suturalis*, male; *g*, middle claws of *A. suturalis*, male.

may all show some difference and are rarely all alike, the hindmost pair, and sometimes the two hinder pairs, commonly having a simpler form of claw than the others, that is, the larger one of the two claws is less often cleft at the tip. The outer claw of the four posterior feet, and the inner one of the front feet, are always longer than the others, and it is the longer claw alone which tends to bifurcation. The meaning of the varied forms and combinations in which this bifurcation is found is less obvious

than that of the mobility and prehensility of the claws, but as the points of the claws act as grappling hooks, no doubt extra security is gained by two points of contact instead of one, while the extreme fineness and delicacy of the Ruteline claws, which would be speedily injured by use upon the hard ground or the trunks of trees, is quite suited to the soft surface of green leaves. In one group of RUTELINÆ—the PARASTASIINI—in which everything points to a mode of life in marked contrast to that of the rest, and which are certainly not foliage-feeders, the claws are much more robust and blunt.

It is not surprising to find the prehensile character of the claws especially developed in the males of many of the species. As a rule this applies only to the front claws, the larger of which is very often dilated and abruptly bent inwards. Sometimes the enlarged claw meets in the folded position a special projection from the lower surface of the penultimate joint, and this projection may be deeply and regularly scored to increase its gripping power, while the whole tarsus is then generally shortened and thickened, obviously indicating great muscularity (fig. 6). The inner surface of all the thickened joints may be regularly and microscopically scored (*e. g.* in species of *Popillia*) like the face of a file. In some cases the longer middle claw is modified in the same sex, and the longer hind claw as well as the others may be entire in one sex and bifurcated in the other. It is a remarkable fact that this bifurcation indicates the male in certain genera and the female in others. Thus, in some ANOMALINI, while the females have the longer front and middle claws cleft, the males have all entire, or (as in *Popillia*) all but the front ones. In certain PARASTASIINI, on the contrary, the simpler form of claw indicates the female, that sex, in *Parastasia confluens* and allied species, having all the claws simple, while the longer one of the four posterior feet is cleft in the males.

Elytra.—The elytra in one large section of the subfamily (ANOMALINI) have a peculiar narrow membranous fringe, devoid of pigment and quite different in texture from the remaining surface, around the external margin. The pattern of impressed lines and punctures upon the elytra presents considerable variety in this group, and observation of its exact character is important for the discrimination of the almost endless series of exceedingly similar species, often highly inconstant in coloration, which largely compose such genera as *Anomala* and *Popillia.* For the clearly comprehensible description of this feature it is essential to adopt a consistent method of enumeration and nomenclature, and the method adopted and the considerations on which it is based are explained here. Widely different as the configuration of the surface of the elytra appears in different species, careful comparison enables us to trace its development in all cases back to a primitive condition which was probably common to the ancestors of most, if not all, beetles.

In the soft undeveloped elytra of the pupa, in which the

ancient unmodified wings partly persist, six elevated ribs or nervures containing the main tracheæ and other vessels are plainly visible, one running along each margin of the wing and four between and parallel to them. In many species of *Adoretus*, *Anomala*, etc., as well as in the DYNASTINÆ and other groups, a practically identical condition is seen in the mature state, the six ribs being divided by the humeral callus or shoulder prominence into an inner and outer series of three, and separated by broader intervals which generally diminish from the inner to the outer margin (fig. 3, *a*). The two innermost and broadest of these intervals are dorsal, the third is continuous with the shoulder prominence, and the two outermost intervals are lateral and more or less perpendicular. These lateral costæ and intervals are generally crowded together and show few distinct differential characters, and it is sufficient to examine those which lie between the sutural or inner edge and the shoulder, *i. e.* those here called the dorsal spaces. The six elevated ribs, called the primary

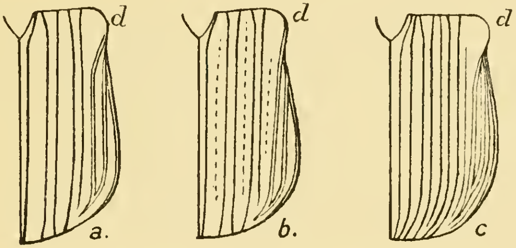


Fig. 3.—Right elytron, to show types of sculpture: *a*, primitive condition; *b*, intermediate condition; *c*, advanced condition; *d*, humeral callus.

costæ, are counted from the inner edge of the elytron, the first being also known as the sutural costa and the third as the intrahumeral. The primary costæ are generally emphasised by a line of punctures bordering them on each side, sometimes united into a continuous groove, and the punctures or grooves often remain when the costæ have disappeared as elevations above the general level. The appearance of a line of punctures, more or less regular and complete, along the middle of each of the intervals (or at least of the inner ones) separating the primary costæ, forms the next and most common stage in the RUTELINÆ (fig. 3, *b*). These secondary lines are often so far developed as to be practically indistinguishable from those which outline the primary costæ, so that seven similar and equidistant lines appear between suture and shoulder instead of five unequally spaced ones (fig. 3, *c*). Rarely, as in some species of *Parastasia*, the lines vanish almost completely, leaving the surface smooth, but the lines which indicate the primary costæ are more persistent

than the secondary and later-developed intermediate ones, which often break up, so that they may become partly duplicated or may be scattered irregularly over the interprimary spaces, as in most species of *Adoretus.*

The spaces lying between the lines or grooves are called the elytral intervals, and they, like the lines, are counted consecutively from the suture outwards. The second interval from the suture (frequently very broad and sometimes more or less completely divided along the middle) is called the subsutural one. In order that parts not really corresponding may not be confused by being similarly numbered, it is important to distinguish between the primary and interprimary spaces. This can always be done by remembering that the humeral callus (or shoulder-prominence) is always just beyond the third primary costa, and that when there are more than five intervals between it and the suture (*i. e.* dorsal intervals) the 2nd and 3rd are derived from the subdivision of the 2nd, and the 5th and 6th from that of the 4th primary intervals.

Abdomen.—The abdomen consists beneath of six visible segments, the first almost covered by the coxæ and only slightly exposed in the middle and at the sides. The first five segments are capable of little or no separate movement, but between the 5th and 6th there is a wide flexible membrane, allowing free play to the terminal segment. This segment may be large or very small. In the female it is generally fairly large and its posterior edge coincides with that of the last dorsal segment (pygidium). The latter is usually large and completely exposed, and a part of the preceding segment (propygidium) is often exposed also.

Genitalia.—In distinguishing the often closely similar species here dealt with I have made considerable use of the genitalia of the males, which in these insects can be removed and mounted with little difficulty. The abdomen can with care be detached in the dry state by pressure exerted beneath the elytra and can be re-attached after the removal of its contents, a process which will incidentally have the effect of reducing the risk of the destruction of the specimen from subsequent chemical changes. The highly chitinous ædeagus, when separated, should be fixed to a card strip in such a way that it can be easily seen from every side. For diagnostic purposes the rigid external sheath alone is usually regarded, and the outline figures accompanying this work represent that part only. Within the tubular sheath is the eversible sac, with its generally complicated armature of spines, which may be found extruded to a greater or less extent. Being a soft structure this has no fixed outline and must be carefully left out of account when comparisons are made. The highly chitinised sheath may consist of a single tubular piece terminating in a kind of spout of varying form, as in the genus *Adoretus* and certain groups of *Anomala*, the orifice being on the dorsal side in the former and the ventral side in the latter, but generally terminates in a pair of

lobes, called the paramera, on the dorsal side and a median lobe ventrally, which is often strongly bifurcated. It is this terminal part which, in the present subfamily, assumes an extraordinary variety of forms, and in species closely allied usually exhibits differences of shape so well-marked as to afford more definite and certain evidence of distinctness than any part of the external anatomy. Strange and almost fantastic forms are sometimes found, reminiscent of the external outgrowths of many male Lamellicornia, but without the extreme variability so characteristic of those outgrowths. The ædeagus indeed seems to combine a tendency to more rapid and considerable changes under certain conditions with less variability under other conditions than other parts of the body. When a species forms a compact colony of restricted range, although in colour and other external features it may show great variability, the form of the ædeagus appears to be very constant; but in wide-ranging insects the ædeagus is sometimes found to exhibit in different localities differences of form which, when the extremes are compared, are strikingly unlike. Such a case is represented in *Pachyrrhinadoretus* (Plate V, figs. 4–10), in which a remarkable transition in the shape of the organ is traced as we advance from north to south. Another instance is shown in Plate IV, figs. 30–32 representing *Adoretus costopilosus*, another wide-ranging insect. Fig. 32 is from a typical example from the Andaman Islands, fig. 31 from one taken in the Chittagong Hills, and fig. 30 from the United Provinces. Such variation, according to my observation, is always geographical and not found in individuals from the same place. It must be supposed that this divergence in members of the same community would constitute an obstacle to interbreeding and so become immediately checked. We may also assume that the isolation of outlying colonies of such wide-ranging species by the elimination, from any cause, of the species in a connecting district would result in their complete separation from the rest and so give rise to independent species, which would not necessarily show any external distinctive features. These organs are therefore of great importance and, while the occurrence of considerable variability must not be overlooked, it may be stated as a general rule that specimens with the same form of ædeagus, although otherwise dissimilar, are conspecific, and that specimens from the same locality with a different form of ædeagus, although they may be otherwise similar, are specifically different. The external characters separating the species in many groups of the genus *Anomala*, for instance, are so minute that, unless considerable series are compared with extreme care, their significance can scarcely be appreciated; but when such series are not available the examination of the ædeagi will often reveal marked differences which unmistakably indicate that more than one species is present. The value of the ædeagus for the purpose of classification consists, not in any essential difference in its degree of constancy as compared with other features, but in the fact that

the changes it undergoes are larger in amount, relatively to its size, and therefore more measurable, than those of any part of the external anatomy, subject as the latter is to the restraining effect of environment.

Colour and Pattern.

The RUTELINÆ, while they include many species, in India and elsewhere, which for beauty and brilliance of colouring can scarcely be excelled, are less generally characterised by bright combinations of colour than the CETONIINÆ. Regarded as a whole their colours are simple and, in their natural environment, inconspicuous. Certain large groups, like the ADORETINI and an important part of the great genus *Anomala*, which are nocturnal in their habits, are of dull brown or yellowish shades, and many of the remainder, which in all probability frequent and feed upon foliage by day, are of various shades of green in harmony with their surroundings. The chief exceptions to this are found in the PARASTASIINI, which from morphological evidence already mentioned, may be safely pronounced to be neither nocturnal nor foliage-frequenting. Amongst these are Indian species of bright red hue (*Parastasia sulcipennis*), sharply contrasted scarlet and black (*P. alternata*), and jet-black with strikingly conspicuous orange markings (*P. rufopicta*, *P. basalis*, etc.). The conclusion seems irresistible that these insects, unlike most other RUTELINÆ, aim at conspicuousness and not at concealment. I believe it will be found that the members of this group are generally unpalatable, while the rest are for the most part relished by birds and insectivorous animals. Probably certain species of ANOMALINI with sharply contrasted colours are also unpalatable. A number of Indian species, like *Mimela fulgidivittata*, *M. leei*, and *M. horsfieldi*, *Anomala auronitens* and *A. pterygophorus*, and *Callistopopillia iris*, are striped with fiery-red and golden bands upon a brilliant green background, and others, like *Macropopillia arrowi*, *Anomala princeps*, *A. flavopicta* and many more, show sharp contrasts of orange and black or green.

Among the nocturnal ADORETINI, while the colouring is almost uniformly dingy, a number of species have a more or less complicated pattern produced by the manner of distribution of the fine setæ with which the surface is clothed. This is a very interesting phenomenon, the meaning of which is quite unknown.

When writing, in the previous volume, of colour and pattern in the CETONIINÆ, I referred to the wide limits of variation in those features and their unreliability for the discrimination of the species. This is perhaps even more true of the RUTELINÆ, as is seen in such extraordinarily variable insects as *Anomala polymorpha* and *A. transversa*, *Popillia discalis*, and many others; but another fact of equal importance emerges rather strikingly from the study of the present subfamily, namely, the great significance of types of coloration as indications of the natural

affinities of the species. While great dissimilarity in coloration of different individuals is consistent with their specific identity, in a wider sense the colour may be found to have a very great degree of constancy and to form the most distinctive and important feature of large groups of species. Various natural groups will be indicated in this volume which, varying greatly in structural features, are recognisable by a definite system of coloration common to all their members.

The colouring of the lower surface is of greater significance from this standpoint than that of the upper surface, being much more free from individual variation. The colouring of the upper surface varies to such an extent in many species that some specimens appear light with dark markings and others dark with light markings, but in practically every case a glance at the lower surface is enough for the relegation of an insect to its proper category—light or dark. For instance, *Anomala varicolor* and *A. ruficapilla* are normally light-coloured species with some dark dorsal areas, but specimens of both occur in which the dark colour predominates, while in another variable species, *Anomala rugosa*, the female is predominantly light above and the male predominantly dark; but in all these the lower surface, in the dark and light specimens alike, will be found to be pale-coloured. *Anomala transversa* again may be entirely black, black with a pale transverse band upon the elytra, or almost wholly pale above; but here also the lower surface, which is invariably black, reveals at once that the dark phase is the original and the light the acquired condition.

In this great genus *Anomala*, which is so huge and various as to afford abundant materials in itself alone for the study of very many entomological problems, certain groups have been separated as distinct genera on account of the shape of the mesosternum, which differs to a very striking extent, but which seems to have in reality much less importance than has been generally attached to it. There is a group of closely related Malayan species, typified by *Anomala citrina*, Lansb., all of them having the same peculiar pale greenish-lemon tint, but all differing in the degree of development of the mesosternum, which may have a strong pointed process or none at all, showing that as a group-character this structural feature is of less importance than the colour.

The most cursory survey of the genus will reveal amongst its very heterogeneous elements two conspicuous types—(1) long and rather parallel-sided species of pale colour, and (2) short-bodied, oval species, generally of some shade of rich green. After long-continued efforts to define these groups by means of structural characters, I found myself obliged to reject all the latter as insufficiently stable and to recognise that the type of coloration really forms the most deep-seated and natural distinctive feature. The presence or absence of any degree of metallic lustre is a very important indication of the affinities of a species. *Anomala marginipennis* is a pale, elongate insect, which seems at first sight to

have all the features of the pale-coloured group first mentioned above, and indeed has the closest resemblance to some of its members. Close attention shows it to have a very slight metallic lustre, and a still more minute examination reveals two other rather recondite characters, namely, the toothing of the front tibiæ and the middle claws of the female, by which its true affinities are shown to be quite different from its apparent ones.

It is thus evident that, greatly as the coloration of these insects is liable to vary, this variation has definite limits, and in order that we may not be bewildered by it, it is important to ascertain as far as possible the principles by which it is governed.

As horticulturists find that within a certain range of colours variations are easily produced, whilst others are practically incompatible, it is no doubt the case with insects that colour-variation, although sometimes appearing almost unrestrained, is actually limited to shades which are distinguished by a minimum of chemical difference, minute chemical changes sufficient to produce these occurring at a sensitive period in the development, possibly under the influence of environmental conditions. A certain range of metallic colours, of which brilliant greens are the predominant tints, seem the most liable to variation of this kind, and typical instances are *Anomala fulviventris* and *A. polymorpha*, of which, although very brilliant, it is quite impossible to say what is the normal colouring.

Differences of pattern belong to another category, and are dependent on the quantity of pigmented surface, and therefore upon the amount of pigment produced. Pigmentation appears to begin at certain fixed points and to extend in particular directions, forming patterns which are generally very simple and are often found to recur independently in quite unrelated groups—sometimes forming the basis of mimetic resemblances, in which the shape of the mimic and not the coloration is the more recently acquired character.

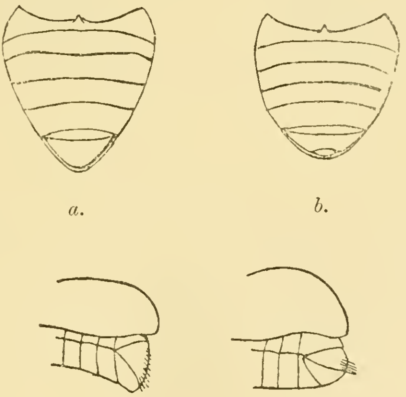
A reduction in the amount of pigment produced may result in the simplification of the pattern by reversion to a more primitive one, or its complication by the failure of small pigment-masses to unite into large ones.

Generally speaking, pigmentation is slight when the chitinous integument is thin and increases with the strengthening of the latter; soft-bodied insects being very frequently yellowish in colour, while the highest degree of chitinisation is as frequently accompanied by black or very dark colouring. Similarly the darkest-coloured parts of an individual insect are commonly found to coincide with the hardest parts of the external skeleton. Thus in an insect's wing the colouring-matter is generally distributed very thinly through the membrane, but concentrated in the veins. In the body we commonly find a similar concentration at the extremity of leg- and antennal joints, in the jaws, spines, and other highly chitinised parts, the thickened bosses or calli produced near the shoulders and apices of the elytra, and on the

vertex of the head in many beetles. There is darker pigment also at the edges of plates, especially where two edges have united, forming a highly chitinised suture, and this often remains as a dark line when all other trace of the suture has vanished. Increase of the amount of pigment produced results in the dilatation of these colour-patches and their fusion in a variety of ways.

Sexual Dimorphism.

The present subfamily is not, like the DYNASTINÆ, the COPRINÆ, and the LUCANIDÆ, a group in which dimorphic forms are predominant. Highly developed armatures, such as are familiar in those groups, are here found in a very few cases only; but, although not in its most exaggerated forms, Sexual Dimorphism can be studied with special advantage in the RUTELINÆ, for there is perhaps no group of similar size in which it manifests itself in a greater variety of phases. This applies in a special degree to the Oriental representatives.



a. *b.* *c.* *d.*

Fig. 4.—Extremity of the body of: *a*, *Anomala* (ventral side), female; *b*, ditto, male: *c*, *Adoretus* (lateral view), male; *d*, ditto, female.

In larger genera like *Anomala* and *Adoretus*, in which the species are very numerous and difficult to distinguish, it often happens that the two sexes of the same insect, although not differentiated by any obviously sexual features, like the horns or mandibles in the other groups just mentioned, resemble each other less than they do specimens of the same sex of closely allied species, and it is therefore of great importance to know with certainty the sex of the example it is desired to identify. The sex-marks in the subfamily are very many and various, and some, like division of the claws, may indicate the male in one case and the female in

another. But there are certain indications by which the sex may be accurately determined in almost every case without difficulty. Thus throughout the ADORETINI it will be found that the female has the abdomen more or less convex beneath and the pygidium very short and little exposed (fig. 4, *d*), while in the male the abdomen is arched or hollowed a little from the base to the extremity, and the pygidium is comparatively long, protuberant, and exposed (fig. 4, *c*).

In the ANOMALINI the shape of the last ventral segment provides a constant distinction. In the female it is triangular or semicircular, that is, its widest part is in the middle (fig. 4, *a*). In the male this is never the case, the segment being short, its hinder edge more or less excised and the excision filled in with a smooth shining membrane (fig. 4, *b*). The male may also be recognised by the dilatation in some degree, sometimes very great, of the inner claw of the front foot.

In the PARASTASIINI, although Sexual Dimorphism is more prevalent than in any other group of RUTELINÆ and assumes a greater variety of forms, there is no single and invariable distinguishing feature by which the sex of a specimen can be easily recognised, but a careful examination of the abdomen will reveal in the majority of cases a certain characteristic difference of form. In females the hinder part is more protuberant and pointed in shape, while in the males it is more or less shortened, and the last dorsal segment (pygidium) is more vertical in position. Another frequently-found difference is in the shortening and thickening of the front tarsi of the males, generally accompanied by a dilatation of the inner claw, as in the ANOMALINI.

In the General Introduction to the Lamellicornia of India, I have expressed my opinion that the most striking examples of Sexual Dimorphism are to be regarded as due to a hypertrophy of parts of the anatomy of the male which have ceased to have any functional importance. Although a few remarkable examples of this class are found in the RUTELINÆ, they are quite exceptional, but there are two other classes which appear here in considerable variety, although not well represented in the groups previously dealt with.

The first of these classes concerns the sensory organs, which, as in insects of most orders, are subject to specially high development in the male. Particularly in cases where the female is wingless or inactive, the antennæ of the male may assume very much enlarged or elaborated forms. Amongst the Pleurostict Lamellicornia wingless females are practically confined to the MELOLONTHINÆ, and it is in that subfamily alone that the club of the antennæ of the male is subject to any multiplication of the number of joints composing it. In all others that number is invariably three in both sexes, and any sexual modification is confined to an increase in their size. Even this is almost unknown in the CETONIINÆ, in which the two sexes appear to be equally active. The same applies to the DYNASTINÆ as a whole, except

in a group of Australian genera (*Corynophyllus*, etc.), the females of which are sluggish and rarely found, and the males have the antennal club so greatly enlarged as to form their most conspicuous feature.

In the RUTELINÆ some degree of elongation of the club is almost general in the male, but the greatest development is found in certain species of *Anomala* (*A. macrophylla*, *communis*, and allied forms). In these it is generally found that the female is rare, or at least more rarely captured than the male, the reason being, not necessarily that the actual numbers of the sexes are very disproportionate, but more probably that the females are sluggish in their habits and expose themselves less to the risk of

a. *b.*

Fig. 5.—*Adoretus versutus*: *a*, male; *b*, female.

capture than the males. The enlargement of the sensory surface of the antennæ of the latter probably implies a corresponding delicacy of the sense of smell, and, like the enlargement of the eyes, which often accompanies it, has become necessary in consequence of the need for seeking out the females in their retreat. The enlargement of the eyes is always accompanied by a reduction in the size of the clypeus, and this form of sexual disparity occurs in both *Anomala* and *Adoretus*, becoming most accentuated in the *Adoretus* group. It seems to be peculiar to species of nocturnal habits, and is found in some degree in nearly all the ADORETINI, producing in many species, like the very common *Adoretus versutus* (fig. 5), a marked dissimilarity between the two sexes. Perhaps the extreme development is found in *Heterophthalmus ocularis*, a rare insect occurring in Southern India.

The second group of sexual characters is formed of those directly concerned in the reproductive functions, most of them consisting of modifications of the claws and feet of the males, which apparently increase their grasping power. A feature already mentioned, viz., an enlargement of the inner claw of the front foot, often accompanied by more or less thickening of the front tarsus and shorter and sharper teeth upon the front tibia, is found in the great majority of the RUTELINÆ. In most of the ANOMALINI the front inner claw is broadened into a flat plate, often abruptly bent near its base, and capable of being folded

back close against the joint bearing it, which has a corresponding excavation of its inner face, so that a locking apparatus results. A further development occurs in genera like *Peperonota* and *Didrepanephorus* (fig. 6), in which the tip of the enlarged claw when folded back meets a prolongation of the penultimate joint having the form of a broad plate, the surface of which bears closely-set parallel ridges beautifully adapted to prevent the slipping of the object grasped in the vice. The shortening and thickening of the legs is evidently a means of obtaining increased muscular power and the dilated claw no doubt provides inside a larger surface for muscle attachment. The modification sometimes affects the middle as well as the front claw, and in *Popillia cupricollis*, *P. marginicollis* and a few allied species, the two anterior pairs of legs are altogether much stouter than those of the female, which, however, has very powerful hind legs, with tarsi shorter and thicker than those of the male.

Fig. 6.—Front tarsus of *Didrepanephorus bifalcifer*, male.

The enlargement in the male of the inner claw results, in genera in which that claw is ordinarily cleft, in the inequality of the two divisions and a tendency to the dwindling or even the complete disappearance of the outer branch. In many species of *Anomala* and *Adoretus* only a minute vestige of it is traceable in this sex, and in various others, the females of which have a cleft claw upon each of the four anterior feet, the males have either all simple or those of the front feet only cleft. The latter condition is that most prevalent in the genus *Popillia*. It may therefore be stated as a general rule that, when the two sexes differ in this respect, the claws of the female are more divided than those of the male. But it is a remarkable fact that in the Parastasiini, the many structural peculiarities of which denote habits quite different from those of the rest of the subfamily, this rule is reversed. Sexual differences here also are numerous, and the claws exhibit a variety of different combinations; but it is in the females that we here find all the claws undivided, while the males often have the longer one deeply cleft. To increase the contrast, the front claws, which in the other groups are the most generally divided, are here most often undivided, while the hindmost.

which are always simple in the ANOMALINI and ADORETINI, are here usually cleft in the male or in both sexes. In a curious new genus of ADORETINI described later (*Lissadoretus*) the rule is also reversed, and the female has all the claws simple, while the male has the longer front and middle ones divided. The peculiar build of the female in this case seems to suggest an adaptation to some special and non-arboreal mode of life.

In one small group of Malayan species of *Parastasia* the middle feet of the male are specially modified, instead of the front ones, the outer claw of each bearing a broad flat lobe.

I have mentioned that a sexual difference in the form of the front tibia is common, but the hind tibia is almost equally liable to differ. That of the female is commonly shorter and broader than that of the male and dilated at the end. Probably this modification of shape enables the female better to perform the digging operations involved in the deposition of her eggs.

In a few species of *Anomala*, a curious difference in the spurs at the end of the hind tibiæ manifests itself. The longer one of the two spurs, in the males of *A. pterygophorus*, *A. stoliczkæ*, *A. anthracina* and *A. propinqua*, is lengthened, strongly curved, and blunt or knobbed at the end, while in the females both spurs are straight and acute. *A. propinqua* and *A. anthracina* are only remotely related to the other two species mentioned, so that this appears to be an instance of an almost identical modification arising independently.

Of similar significance to the modified feet of the males are certain features characterising the females of many species. For instance, a structure found in the females of many DYNASTINÆ (*Cyclocephala*, etc.) recurs in various genera of RUTELINÆ (*Peltonotus*, *Fruhstorferia*, certain species of *Anomala*, etc.). This is an abrupt thickening or expansion of the outer margins of the elytra at a point usually just behind the middle. In *Parastasia sulcipennis* (figs. 11 & 12) and various allied species, the elytra, which in the male are peculiarly smooth and glossy, bear in the other sex very deep furrows, which, combined with other differences of colour and shape, give the two sexes a totally different aspect. In *Anomala rugosa* (figs. 39 & 40) the elytra of the female are very finely sculptured in such a way as to be quite dull in appearance, while in the male they are shining, and in *A. flavonotata* there is a similar, although smaller, difference. Disparities of a rather similar kind are not uncommonly found in the pygidium and propygidium. Thus in *Parastasia rufopicta* (Plate I, fig. 4) the propygidium of the male has a silky lustre, but in the female it has a highly peculiar dense granulation which produces a kind of sooty surface. In an allied species, *P. basalis*, the propygidium is the same in both, but the pygidium is covered with hair in the female and bare in the male. An exactly similar difference is found in *Anomala dimidiata* and other species of *Anomala*, although the relationship between the genera *Parastasia* and *Anomala* is remote. In other cases a slight difference in the sculpturing of the pygidium distinguishes the sexes.

A surprising distinction is the occurrence of a longer mesosternal process in the female than in the male. I first called attention to this in the Malayan *Parastasia mirabilis* (an announcement which was received with some scepticism), but a second instance is pointed out here in *P. sulcipennis*. Whether these curious and varied differences have any functional significance or not, observation may perhaps eventually determine. None can be suggested in the present state of our knowledge, either for those just mentioned, or for the modifications of the male anatomy which follow.

In several genera a slight dilatation of the clypeus is found in that sex, the front margin being straighter, more strongly reflexed, and more angular at the sides than in the female, which has it simply rounded. This is found in the Australian genus *Anoplognathus*, the American *Phalangogonia*, and in several unconnected groups of *Anomala* (e.g., *A. dorsalis*, *A. tenella*, *A. lateralis*, etc.).

Anomala armata, although one of a group of exceedingly similar species, and whose female can only with difficulty be distinguished from that of *A. strigata*, is unique in having in the male a strong backward-pointing process to the hind femur, but a similar effect is produced in the same sex of *A. trochanterica* and *Tropiorrhynchus podagricus* by the sharp projecting trochanters.

A much more striking disparity than any of these characterises the very remarkable *Peperonota harringtoni* (figs. 8 & 9), the male of which has the pronotum prolonged backwards into a strange tail-like appendage. To accommodate this the scutellum and the adjoining part of the elytra are considerably depressed. Closely allied to this is *Dicaulocephalus feæ* (Plate 1, fig. 1), in which the mandibles of the male (the female is still unknown) have enormous outwardly-turned prolongations. *Didrepanephorus bifalcifer* (Plate 1, fig. 5 & 6) is still more extraordinary, its mandibles being produced forwards and curved upwards like a pair of elephant's tusks. In the males of *Fruhstorferia* (text-figs. 14 & 15) the mandibles are calliper-shaped. In none of these armatures, however, does any offensive or defensive purpose seem really probable, for the actual gripping-power is in inverse ratio to the degree of elongation of the mandibles, which become exceedingly delicate and brittle, while there appears to be no increase of musculature.

Yet another male feature, to which I know of no parallel in Lamellicorn beetles, is worthy of mention. It is found in *Adoretus celogaster*, in which that sex exhibits a rounded boss or tubercle at the middle of each ventral segment.

Differences of coloration between the two sexes are not very numerous, but there are sufficient to provide a pitfall for incautious systematists who may be content to rely only upon a feature so superficial as pattern in the determination of species. Amongst those not very numerous species that have a definite pattern, I have found several cases in which the patterns of the male and female are strikingly different. This becomes more perplexing from the fact that, with the exception of a very few

really competent writers like Burmeister, it has been the usual custom to describe species from one sex only, generally without the describer himself knowing which.

One of the instances just referred to is *Anomala bilunata*, Fairm. (figs. 36 & 37) a name which indicates the very distinctive pattern of an insect bearing two pale crescent-shaped marks upon a dark background. But the describer was not aware that he was dealing with the male only, which sex appears to be less abundant than the other. I have seen only three or four specimens of it, but more than a dozen females, and the latter are pale-coloured insects with a dark crescent, and, of course, present an appearance in very marked contrast to the male. A similar difference occurs in *A. nigrovaria*.

In *Anomala fulviventris*, an insect most perplexingly variable in its colouring, the males are nearly always of a deep metallic green on the upper surface, often with a yellow margin to the pronotum; while the females may be yellow, their elytra may be striped with green or entirely green, and the pronotum usually bears two green spots, which may coalesce; but I have not yet seen any female quite as dark-coloured as the lightest males. *A. chinensis* is a closely-related, but much more constant, species; and here, while the female has the head and pronotum red and the elytra only dark green, the male has the forehead and middle of the pronotum, as well as the elytra, green.

In *A. conjuga* the pattern is the same in both sexes, but the decorated areas are of a much lighter colour in the female than in the male.

These examples illustrate the general rule that when a difference of coloration occurs between the two sexes the male is the darker coloured form. In the *Parastasia* group, however, this rule is reversed, and we find the darker coloration an invariable indication of the female. In several species that sex is entirely black, while the male is yellow, and in the Indian species, *P. andamanica* and *P. confluens*, the females have a ground-colour of black or very dark brown, while in the males it is yellowish, the markings being the same in both.

Habits and Metamorphoses.

Very little has yet been recorded as to the life-history and early stages of the RUTELINÆ. The larva of *Parastasia confluens* has been described and figured by Schiödte (Naturhistorisk Tidskrift (3) ix, 1874), and Mr. H. Maxwell Lefroy has published descriptions and figures of *Anomala varians*, one of the commonest Indian species, in all its stages (Memoirs of the Indian Department of Agriculture, Entom. Ser. ii, 8, 1910, p. 143, pl. xiv). More recently Mr. F. H. Gravely has found two species of *Adoretus* in all stages, so that the larvæ of the three principal types of Indian RUTELINÆ have now been discovered. They are identical in all essential features, and differ only in slight details from the larvæ

of the other Pleurostict subfamilies. They most closely resemble those of the MELOLONTHINÆ, being, like the latter, rather more slender in their build and less hairy than the DYNASTINÆ and CETONIINÆ, with a well-marked attenuation of the body about the middle. The last two segments, though large, are rather less so than in the MELOLONTHINÆ, and a slight difference in the conformation of the terminal part appears to afford a means of distinguishing the larvæ of the two groups, so far as the few known forms enable us to judge.

Fig. 7.—*Adoretus versutus*: *a*, larva; *b*, pupa, ventral side; *c*, ditto, dorsal side.

In the RUTELINÆ the last tergite and sternite are of similar shape, and their posterior edges exactly coincide with each other; whereas in the MELOLONTHINÆ the last tergite is a little more produced and attenuated than the corresponding ventral segment, and so is plainly visible when the insect is looked at from beneath. The last ventral segment is studded with stiff erect spines as in the MELOLONTHINÆ, and the arrangement of these spines seems to differ according to the species, and to afford an important means of identification, although they do not appear, as a rule, to form the regular longitudinal lines so commonly seen in the MELOLONTHINÆ.

With the exception of the comparatively small section of the PARASTASIINI, the RUTELINÆ of the Indian Region may be assumed to be practically all root-feeders in the larval, and leaf-feeders in the adult, stages. The PARASTASIINI feed, in the larval stage, upon dead and decaying wood (we have no information as to the habits of the mature insects), and are of no significance economically; but the rest must be considered as all injurious to vegetation, and so, potentially at least, to agriculture. The records of injury done by them to crops in India are not at present numerous, but species of *Anomala* and *Adoretus* are known to commit considerable ravages. In the Sandwich Islands, species of these two genera, introduced by accident from other parts of the East, have multiplied enormously and caused great havoc in the sugar-cane plantations. Mr. H. Maxwell Lefroy has described in detail the life-history of *Anomala varians* (=*A. polita*, Bl.), which destroys the roots of ground-nut, rice,

millet, sugar, and other crops. The female beetle deposits her eggs singly in the ground near suitable roots, the total number of eggs laid by one individual, as observed by Mr. Lefroy, being from nine to thirty. As in other Lamellicornia, the eggs increase considerably in size before hatching, growing in a few days to more than double their original weight and bulk, no doubt through the absorption of moisture by the albumen. When first laid they are elongate-oval in shape, but become afterwards almost exactly spherical. Eggs laid on June 1st hatched on June 10th, and the growth of the larvæ was exceedingly rapid. They fed upon the roots of rice grown for them in the observation-cages, and by September had reached full size and withdrew deeper into the earth, where each prepared a chamber of earthy particles, in which it rested until the following March or April. No change took place during this long period, except that a slight contraction of the body was apparent; but about April the skin split along the back, exposing the pupa within it. In ten days more the mature beetle emerged. The emergence under natural conditions seems usually to take place just after rain, the beetles probably finding the cells in which they have passed the long dry season too hard to break through previously. After the ground and the earthen cocoons have been sufficiently softened by the first rains, the insects make their appearance in considerable numbers. They are nocturnal in their habits, flying at dusk and being very commonly attracted by light. Probably they rest by day beneath the surface of the ground, and emerge at night to feed upon foliage. The capture of very many species of *Anomala* (although not of the brightly-coloured ones, which are diurnal) is due to their being attracted by lights, and of some of these only males have been so far taken (e. g., *Anomala euops*). In other species, of which both sexes are known, the males considerably outnumber the females. This is probably due, in part at least, to the latter having more sluggish habits than the males, but it seems to be the case with some species that the males emerge some time before the females. Mr. F. Muir, who visited Japan to investigate an *Anomala* (*A. orientalis*)—native to that country—which had become a serious pest of the sugar-crops in the Hawaiian Islands, tells me that he found males there in numbers at the beginning of June but no females. This continued for three weeks, after which females were occasionally to be found in flowers, but never in association with males, although these were still more numerous than before.

Amongst other definitely injurious species, *Anomala tenella*, Bl., is destructive to the tea-crop in Ceylon, the beetles being found devouring the young shoots in great numbers. A closely-allied species, *Anomala dalmani*, found in southern China, is similarly destructive in the Chinese plantations. *Adoretus lasiopygus* causes serious damage in southern India by devouring the leaves of the grape-vine, mango, etc. Another species of *Adoretus* (*A. compressus*, Wied.) belonging to the Indian fauna has caused

great loss to the Hawaiian sugar-growers, the larvæ feeding upon the cane-roots and destroying the plants. This species has an enormously wide distribution in the East, and probably, like many of the numerous sugar-pests, feeds normally upon grass-roots; but it appears to be much less common in India than *Adoretus versutus* and several other species which are extremely abundant, and are found in Calcutta to defoliate cultivated roses, cannas, etc. *Adoretus compressus* has been successfully checked in the Hawaiian Islands by artificially infecting it with a fungoid growth.

Dr. Ohaus has stated that practically all leaf-feeding RUTELINÆ will feed with alacrity upon bananas and other soft fruits when opportunity occurs, but I have found no record of any damage caused by Indian species to fruit or flowers. As to the habits of the vast majority, however, we are in complete ignorance. The manner of life, even of such a large and familiar genus as *Popillia*, is absolutely unknown, as well as that of genera like *Rhinyptia*, *Peperonota*, *Didrepanephorus*, and *Peltonotus*, which, from their structural peculiarities, may be reasonably supposed to have correspondingly peculiar habits. There is a curious tendency, which repeatedly recurs in different sections of RUTELINÆ, for the clypeus to be narrowed to a more or less pointed snout. This is characteristic of *Tropiorrhynchus*, *Rhinyptia*, *Adorrhinyptia* and *Oxyadoretus*, but it also occurs in one species of *Popillia* (*P. acuta*). Not being accounted for by relationship—for these different species and genera are widely separated from each other—it must be supposed that they have some habit in common for which this is an adaptation, but which has never yet been discovered.

Distribution and Classification.

Although perhaps not occurring in the immense multitudes of many of the MELOLONTHINÆ, and therefore economically of less importance than those, the RUTELINÆ are still very abundant and very destructive, their Oriental representatives greatly outnumbering in species and individuals the two subfamilies dealt with in my previous volume. This abundance is due chiefly to the prevalence of two great genera, *Anomala* and *Adoretus*, which seem to reach their maximum of luxuriance in the Indian region. Of a total number of between two and three thousand species of RUTELINÆ known altogether, 398 are here recorded from our region, of which 261 belong to these two genera. In the great forest-regions of the New World very many species of RUTELINÆ are found living and feeding in their early stages in decaying logs and stumps of trees; but in the Old World this seems to be the habit of comparatively few. Probably all or most of the PARASTASIINI live in that way, but they are rare insects, and the species are not numerous, although amongst them are included the strangest forms in the whole subfamily. An immense majority of the Old World RUTELINÆ belong to the ANOMALINI and ADORETINI. Although differing considerably in important points

of structure, these two groups are similar in their mode of life and in their distribution. All those of which we have any knowledge are root-feeders during their larval life and leaf-feeders when adult. The two groups occur side by side in great abundance of individuals and species throughout Africa, Asia, and the islands of the Pacific, but without reaching Australia (leaving out of account two or three ubiquitous species which have undoubtedly been transported by artificial means). Both groups are absent also from the Pacific slope of South America; but, while the Adoretini are completely unrepresented on the American continent, the Anomalini are fairly numerous in its warmer regions. It is probable that the single genus *Anomala*, perhaps because a recently-evolved one and not yet split up into any natural and well-defined subdivisions, outnumbers in species all the other Rutelinæ.

The Adoretini are rather small, brownish, pale or dull-coloured insects of nocturnal habits, and frequently enter houses in the evening attracted by light.

The Anomalini also include many inconspicuous forms with similar habits, but in the Oriental Region these are outnumbered by brightly-coloured diurnal species—some of them amongst the most brilliantly decorated of all known insects. Vivid green and golden hues are very prevalent amongst them.

In these two arboreal groups the legs and feet are formed for clinging to the leaves and twigs amongst which the insects live, and the mouth for a diet of leaves. Although so much alike in their mode of life and in many points of structure, the Anomalini and Adoretini are sharply divided by their method of feeding. In the first the labrum and labium form a pair of horizontal lips between which the jaws work, each pair co-adapted for grasping and dividing the food like a pair of scissors. In the second group the labrum is produced downwards across the mouth-opening, which is more or less completely divided into a right and left half. Although in the great majority of the species this bisection of the mouth is complete, there are several small genera in which it is in varying degrees imperfect, and in such forms as *Prodoretus* and *Oxyadoretus* there is an obvious approximation to the Anomalini. According to the system of classification hitherto adopted—that devised more than half a century ago, when comparatively few forms had become available for study, by the two highly competent entomologists, Burmeister and Lacordaire—these two groups have been put at opposite ends of the subfamily and separated by the large, mainly American, group of the true Rutelini, of which the Parastasiini of this volume form a small part. I have ventured to depart from this system, and to put the latter group, which is undoubtedly the one with the nearest relationship to the Dynastinæ (omitting the aberrant genus *Peltonotus*), at the beginning of the subfamily, thus bringing near together the Anomalini and Adoretini. As a connecting-link between these stands the new tribe Adorrhinyptiini, which I have

constituted for three species, all of them peculiar to India, which exhibit a remarkable combination of the characteristic features of the ANOMALINI and ADORETINI. Like *Rhinyptia* in the former group and *Oxyadoretus* in the latter, they have the head narrowed in front into a kind of snout, and for that reason have been hitherto confused with *Rhinyptia*.

The PARASTASIINI are sharply separated structurally from the three preceding groups, the forms nearest allied to them being inhabitants of Tropical America (*Rutela*, *Cnemida*, *Pelidnota*, etc.). It is strange that the predominant genus *Parastasia* is confined to the Oriental Region, with the exception of a single species, *P. brevipes*, Lec., which inhabits North America. That the PARASTASIINI form the point of closest contact of the RUTELINÆ with the DYNASTINÆ, the great enlargement of the mandibles of some of the males (*Didrepanephorus*, *Fruhstorferia*, etc.) and the strange thoracic process of *Peperonota* are an interesting indication.

Finally, the PELTONOTINI consist of only about half a dozen Indian and Malayan species composing the aberrant genus *Peltonotus*, formerly grouped with the DYNASTINÆ, but having a mouth-structure which is entirely peculiar to itself. Of the habits of these we are profoundly ignorant.

Key to the Divisions of the Subfamily Rutelinæ.

Labrum horizontal (not produced downwards).
  Labrum visible from above .... **Peltonotini**, p. 27.
  Labrum not visible from above.*
    Mandibles produced beyond the clypeus .... **Parastasiini**, p. 30.
    Mandibles entirely covered by the clypeus.
      Antennæ 9-jointed; elytra with membranous margins .... **Anomalini**, p. 52.
      Antennæ 10-jointed; elytra without membranous margins .... **Adorrhinyptiini**, p. 273.
Labrum produced downwards .... **Adoretini**, p. 276.

* Except in certain males with hypertrophied mandibles (*Didrepanephorus* and *Fruhstorferia*).

Division I. PELTONOTINI.

This group comprises only one peculiar genus, *Peltonotus*, with five species, three of which are Indian. *Peltonotus* was originally placed in the DYNASTINÆ, with which it forms a link. A very remarkable formation of the labrum is its chief characteristic. This organ is not covered by the clypeus, but is plainly visible in front of it, although the clypeus itself is not at all reduced, as usual in those groups in which the labrum is extruded. The mandibles again project a little beyond the labrum. The body is rather loosely articulated together, the abdomen rather long and not covered behind by the elytra, nor closely wrapped by them at the sides. The legs are slender, clothed with long hair, with long spurs to the four posterior tibiæ, and the claws are movable and slightly unequal. The front legs of the male are greatly thickened and modified.

Nothing has been recorded as to the habits of these insects.

Genus **PELTONOTUS**.

Peltonotus, Burm., Handb. Ent. v, 1847, p. 75; Lacordaire, Gen. Col. iii, 1856, p. 402; Arrow, Ann. Mag. Nat. Hist. (8) v, 1910, p. 153.

TYPE, *Peltonotus morio*, Burm.

Range. Assam, Nepal, Burma, Indo-China, Borneo.

Body ovate, loosely articulated. Head not sunk in the pronotum. Eyes rather prominent. Clypeus broadly transverse, not separated by a suture behind and not hollowed, but rather convex, with the front margin scarcely reflexed. Antennæ 10-jointed. Prothorax rounded at the sides and base and not closely fitted to the elytra. Scutellum rather long, straight-sided, and acute. Elytra not long, exposing the abdomen behind. Pro- and mesosternum not produced. Labrum horizontal, extruded, wide, sometimes a little bilobed. Mandibles large and visible from above, concave, nearly straight in front, with a lateral tooth or angulation. Maxillæ armed with four long and very sharp teeth, the palpi slender. Labium rather long, narrowed towards the extremity, strongly constricted at the insertion of the palpi, with two fleshy ligular lobes at the end. Coxæ contiguous, the front ones very large and prominent. Femora and tibiæ very hairy and rather slender, the front tibia armed with three teeth, the others bearing very strong apical spurs. The claws are only very slightly unequal, except the front claws of the male, and the pulvilli are large and end in two long bristles.

The front tibia of the male is much more slender than that of the female and its teeth are extremely short. All the tarsi are much longer, the first four joints of the front tarsus thickened and the last joint enormously enlarged, the inner claw extremely long and strongly bent before the middle.

The elytra of the female have an angular dilatation at the outer margin.

The three Indian species are black, but one of them has a dull bloom, like a ripe grape, upon the elytra.

Key to the Species.

1 (4) Pygidium clothed with long hair.	
2 (3) Clypeus without a marginal tooth	*morio*, Burm., p. 28.
3 (2) Clypeus with a marginal tooth	*nasutus*, Arrow, p. 29.
4 (1) Pygidium without hair	*pruinosus*, Arrow, p. 29.

1. Peltonotus morio.

Peltonotus morio, Burm., Handb. Ent. v, 1847, p. 75; Arrow, Ann. Mag. Nat. Hist. (8) v, 1910, p. 154.

Black and shining and clothed with rather long, erect tawny hair upon the head, sides of the prothorax, legs, pygidium, and lower surface.

It is ovate in shape, with the head rugosely punctured, the labrum scarcely emarginate, the clypeus broadly rectangular. The pronotum is strongly punctured, its sides strongly rounded, the front angles right angles, the hind angles rounded off, the base rounded and not margined. The scutellum is very smooth and unpunctured, the elytra strongly punctured, with a few rather ill-defined rows of punctures. The pygidium is rather finely punctured and clothed with very long, erect tawny hairs.

♂. The legs are long, the tarsi (except the front ones) much longer than the tibiæ. The front tibiæ bear three very short teeth placed rather close together, the second and third very sharp. The claw-joint of the front tarsus is enormously enlarged and the inner claw and the two preceding joints are rather dilated. The inner claw is very long and thick, and strongly and abruptly bent near the base.

♀. All the tarsi are shorter than the tibiæ, the front tibia broader at its extremity and narrower at its base and the teeth longer. The spurs of the hind tibia are shorter and the elytra are more coarsely punctured, with more distinct rows of punctures, the outer edge having an angular thickening near the middle.

Length, 16–19 mm.; breadth, 8–10 mm.

NEPAL; BHUTAN; SIKKIM; ASSAM: Manipur; BURMA: Momeit (*W. Doherty*), N. Chin Hills.

2. Peltonotus nasutus. (Plate I, fig. 10.)

Peltonotus nasutus, Arrow, Ann. Mag. Nat. Hist. (8) v, 1910, p. 155.

Black and shining, with a clothing of tawny hair, as in the previous species.

It is rather larger and relatively broader and more compact than *P. morio*. The head is closely rugose, with the clypeus rather less rectangular, its sides more rounded, and the front margin bearing a slight tubercle in the middle. The pronotum is minutely and sparingly punctured, with the sides strongly rounded, the front angles nearly right angles, the hind angles obsolete, and the base gently rounded. The scutellum bears a few fine punctures, and the elytra are moderately punctured, some of the punctures forming longitudinal lines; the apical margins of the elytra are opaque. The pygidium is sparsely punctured.

♂. The puncturation of the elytra is much feebler than in the female. The front tibia is slender and the teeth minute, the tarsus thickened as in *P. morio*, and the inner claw very long and strongly bent near its base. The mandibles are abruptly truncated at the end.

♀. All the tarsi are about as long as the tibiæ, the front tibia dilated from base to apex, with strong teeth. The sides of the elytra are thickened and dilated near the middle.

Length, 18–20 mm.; breadth, 9·5–11 mm.

Burma (*Col. C. T. Bingham*); Siam; Annam: Laos (*R. V. de Salvaza*).

Type in the British Museum.

This is probably the species from Laos called *P. morio* by Fairmaire (Mission Pavie, iii, 1904, p. 88).

3. Peltonotus pruinosus.

Peltonotus pruinosus, Arrow, Ann. Mag. Nat. Hist. (8) v, 1910, p. 156.

Black and shining, but with the elytra covered, except in the region of the shoulders, with a sooty opaque bloom. The legs and sides of the metasternum are thinly clothed with tawny hairs.

It is elongate-oval in shape and not dilated behind. The labrum is rather strongly bilobed, the clypeus broad, straight in front and rather strongly but not rugosely punctured, and the forehead similarly but a little less closely punctured. The pronotum is devoid of hair, finely and sparingly punctured, evenly rounded at the sides, with the front angles acute, the hind angles obsolete, and the base broadly lobed in the middle and rather strongly impressed on each side. The scutellum is very sharply pointed and quite smooth. The elytra are strongly and deeply

punctured, most of the punctures being arranged in longitudinal rows. Except at the anterior margin and upon the humeral and apical elevations, which are shining, the elytra are covered with a dull opaque bloom. The pygidium is shining, strongly but rather sparsely punctured and devoid of hair. The meta-sternum is finely punctured at the sides and smooth in the middle.

♀. The outer margins of the elytra are strongly reflexed just behind the shoulders, but not dilated, and the front tibiæ are armed with three long and very sharp teeth.

Length, 15 mm.; breadth, 8 mm.

Assam: Brahmaputra Valley (*W. Doherty*).

Type in the British Museum.

Only a single female specimen is yet known of this species.

Division II. PARASTASIINI.

The members of this group are much fewer both in species and individuals than either the Anomalini or Adoretini, but amongst them are the most striking forms in the whole of the Rutelinæ. All of them have a massive, almost clumsy, build, the legs being short and the claws less mobile than in the other groups. The antennæ are 10-jointed and generally short, and the elytra are without a membranous margin. The clypeus is narrow, with its sides convergent and the apex generally bilobed or bidentate. The mandibles are always distinctly visible beyond the clypeus, and are occasionally extremely long in the males. They have generally a hooked terminal tooth projecting beyond the edge of the clypeus. The labrum is thin and horizontal. The maxillæ are armed with several sharp biting teeth at the end. The mentum is rather elongate and more or less constricted before the end for the insertion of the palpi. The legs are short, the front tibia armed externally with three sharp teeth set almost at right angles to it and internally abruptly excised near the articulation with the femur, leaving a projecting tooth beyond the excision which fits into the femur. At its extremity and on the inner face at the lower edge the latter has a prominent lobe by which this tooth is covered in the position of rest. The two spurs arming each of the four posterior tibiæ at the extremity are strong and sharp, but not long, and the middle tibia is generally produced into a sharp spine at its outer edge. The tarsi are short, compact, and fairly slender, with the penultimate joint more or less produced beneath, except in the front tarsus of the female. On the posterior feet this joint forms a single or double spine, sometimes bearing a pair of very strong setæ.

In the male the front tarsus is often more or less thickened and distorted, and the claw-joint enormously enlarged (as in

Peperonota and *Didrepanephorus*), and the process of the penultimate joint then forms a peculiar flattened lobe, with its flat surface beautifully scored with fine parallel grooves. This evidently serves as a firm gripping apparatus, the enlarged claw-joint being hollowed out beneath and the strong inner claw folding back at will on to the grooved plate. This claw is sometimes cleft in the male, but more often undivided in both sexes. The outer middle and hind claws are generally deeply cleft, but sometimes entire in the females, and sometimes in both sexes. The outer front and inner middle and hind claws are always simple. The prosternum bears no post-coxal process and the mesosternum is occasionally produced forward, but more often not.

This Division is remarkable for the striking instances of sexual dimorphism which it includes. Numerous and peculiar differences occur in the genus *Parastasia*, many females being darker in colour than the males, while they are generally more elongate and parallel-sided. The mandibles, the claw-structure, and even the mesosternum, are different in certain species, but the disparity is much greater in some of the allied genera. In *Didrepanephorus*, *Dicaulocephalus*, and *Fruhstorferia* the males have the mandibles greatly enlarged, as in the Stag-beetles, and in *Peperonota* a remarkable horn or process projects backwards from the pronotum, the only example in this subfamily of a thoracic horn, characteristic as it is of the nearest allied group, the DYNASTINÆ.

Probably most, if not all, of the PARASTASIINI feed in the larval state upon rotting wood. Certain species have been observed to frequent blossoming trees in the adult stage. They are evidently not adapted, like the rest of the RUTELINÆ, for clinging to foliage.

Key to the Genera.

1 (6) Ante-ocular ridges not very prominent.	
2 (5) Four posterior tibiæ very spinose at their outer edges.	
3 (4) Mandibles of the male not produced laterally	PEPERONOTA, Westw., p. 32.
4 (3) Mandibles of the male greatly produced laterally	DICAULOCEPHALUS, Gestro,* [p. 34.
5 (2) Four posterior tibiæ not very spinose at their outer edges .	PARASTASIA, Westw., p. 35.
6 (1) Ante-ocular ridges very prominent.	
7 (8) Not clothed with dense hair above	FRUHSTORFERIA, Kolbe, p. 47.
8 (7) Entirely clothed with dense hair	DIDREPANEPHORUS, W.-M., [p. 50.

* The female of *Dicaulocephalus* is unknown.

Genus PEPERONOTA.

Peperonota, Westw., Trans. Ent. Soc. Lond. iv, 1847, p. 296.

TYPE, *Peperonota harringtoni*, Westw.

Range. Himalayas.

Broadly oval and convex in shape. Clypeus tapering, in the male terminating in a single reflexed tooth, in the female in two sharper reflexed teeth placed close together. The eyes are wide apart, with laterally produced carinæ in front. Antennæ short, with the second joint globular, the third conical, and the fourth to the seventh strongly transverse. Labrum bilobed, distinctly exposed. Mandibles exposed, acuminate and reflexed at the extremity and toothed externally. Maxillæ strong, armed with six sharp teeth. Mentum elongate, constricted at the point of insertion of the palpi and slightly bilobed in front. Pronotum very convex, lobed behind, the lobe slight in the female, the sides rounded in front and parallel behind, exactly equal in width at the base to the elytra at the shoulders, to which it fits closely. Scutellum very short, twice as broad as long, with curvilinear sides. Elytra very short and convex, semicircularly rounded behind, entirely covering the abdomen as seen from above. Front tibia armed with three acute teeth, the two lower ones close together. Middle and hind tibiæ armed with several sharp spines along the outer edge. Tarsi rather short, with the longer claw upon all the feet deeply and widely cleft.

♂. The abdomen is extremely contracted and arched beneath, the 5th segment bears a transverse carina fringed with hairs and ending abruptly on each side, the 6th is asymmetrically emarginated, and the pygidium slopes inwards. The clypeus tapers to a point. The pronotum is shorter and more strongly rounded in front, and its posterior lobe is produced backwards as a long curved tapering process, which reaches to about a third of the length of the elytra. The scutellum and the part of the elytra adjoining are abruptly depressed. The front tarsi are short and thick, and the inner claws very blunt and strongly dilated.

The asymmetrically emarginate last ventral segment is, so far as I am aware, unique and is correlated with an asymmetrical ædeagus.

Although the male is extremely peculiar, the female differs little from *Parastasia*, except in the very short and broad scutellum, partly covered by the slight posterior lobe of the pronotum, and the very spiny outer edges of the four posterior tibiæ.

Only one species has been described, but a second is added here.

4. **Peperonota harringtoni.** (Pl. IV, figs. 37, 38.)

Peperonota harringtoni, Westw., Trans. Ent. Soc. Lond. iv, 1847, p. 298, pl. 22, fig. 1; Lacord. Gen. Col. iii, 1856, p. 349, pl. 34, fig. 1.

P. harringtoni, var. *bicornis*, Ohaus, Deutsche Ent. Zeits. 1913, p. 506.

Chestnut-brown, with the antennæ, femora, sometimes most or all of the lower surface and the pygidium, the outer part or the whole of the pronotum, and an indefinite speckling upon the elytra tawny yellow.

The head is rugose, except upon the vertex, where it is smooth and shining. The pronotum is unevenly and rather sparsely punctured and very smooth and shining, the elytra being dull and shallowly and irregularly pitted.

♂. The scutellum is very shining, but coarsely granular. The elytra are very opaque, except the depressed area adjoining the

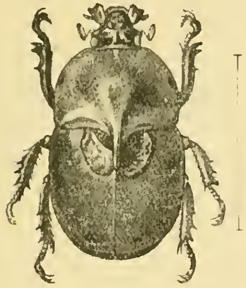


Fig. 8.
Peperonota harringtoni, ♂.

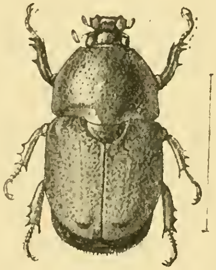


Fig. 9.
Peperonota harringtoni, ♀.

scutellum, which is shining and bears a few fine punctures and granules. The pygidium is convex, shining, and very finely and sparsely punctured. The femora and the edges of the abdominal segments are fringed with long tawny hair.

♀. The scutellum is smooth and shining, with scanty punctures, the elytra shining in the neighbourhood of the scutellum and only slightly opaque elsewhere. The pygidium is nearly flat, vertical, finely and rather rugosely punctured, and clothed, like the abdomen, with rather coarse, but not thick, tawny hair.

Length, 17–22 mm.; breadth, 10–13 mm.

Sikkim: Runghong Valley (*W. K. Webb*, June); Bhutan: Pedong (*L. Durel*—Oberthür Coll.); Assam: Khasi Hills (according to Ohaus).

Type unknown; co-type in the Geneva Museum.

Dr. Ohaus has described a variety of this species (as subsp. *bicornis*) which may possibly, though not probably, belong to the

species next following. He distinguishes it from the typical *P. harringtoni* by the possession of a more broadly rounded clypeus, without a tubercle, and two more pronounced tubercles upon the frontal suture. I have seen no specimen corresponding to this.

5. **Peperonota cristata**, sp. nov. (Plate IV, figs. 39, 40.)

Testaceous, with the head, scutellum, the depressed part of the elytra adjoining the latter and irregularly sprinkled small spots upon their lateral and posterior parts, the base of the pygidium, the front tibiæ, and the tarsi black or brown.

♂. The clypeus bears a small blunt tubercle at its front edge and a strongly bilobed crest on the frontal suture. The pronotum is finely and sparingly punctured and only moderately convex; its front angles are acute, the sides parallel behind and the base produced backwards in the middle as a narrow lobe, which is divided at the end into two slightly diverging lobes. The scutellum is depressed and the elytra are narrowly depressed on each side of it, the depression scarcely extending beyond the scutellum. The depressed surfaces are very coarsely punctured and shining, and the remainder of the elytra is opaque and rather feebly punctured. In other respects the characters are the same as those of the male *P. harringtoni*, to which it is very similar, although distinctly differing in the well-marked transverse elevation upon the forehead, the minutely forked posterior process of the pronotum, and the smaller depressed area of the elytra adjoining the scutellum. The single specimen is of rather large size, but the thoracic process is short, though slender (reaching only as far as the apex of the scutellum), and it is probable that the species attains a greater development.

The female is unknown.

Length, 22 mm.; breadth, 13·5 mm.

Burma: Ruby Mines (*W. Doherty*).

Type in the British Museum.

Genus DICAULOCEPHALUS.

Dicaulocephalus, Gestro, Ann. Mus. Civ. Genova, (2) v, 1888, p. 623.

♂. "Body short, broad and very convex. Head broad and triangular, with the clypeus reflexed, pointed and tuberculate at the apex. Mandibles strongly produced laterally and curved backwards, resembling antlers pointed at the end. Eye-ridges produced outwards on each side into a spine. Antennæ 10-jointed, with a small 3-jointed club. Pronotum nearly semicircular, strongly convex, shining, punctulated, with the posterior margin rounded in the middle and sinuated on each side. Scutellum broad and subtriangular. Elytra short, convex and opaque, depressed near the scutellum, each with a strong basal and more feeble apical callus. Pygidium incurved. Legs short.

Front tibiæ tridentate externally, the two apical teeth close together. Middle and hind tibiæ spinose externally. Tarsi very short, the fifth joint of the front foot larger and the outer claw thickened and simple. Outer claw of the middle and hind feet cleft."

Only a single species of *Dicaulocephalus* is known and of that the female has not yet been found, two males only representing the insect up to the present time. I am indebted to Dr. Gestro for providing me with a carefully drawn figure of the type. The relationship to *Peperonota* is very close and the female will probably show a very great resemblance to that of *P. harringtoni*. The male differs in the remarkable lateral appendages of the mandibles, the absence of a thoracic process and of posterior tubercles on the head, the acute ante-ocular ridges, and the broader and narrower elytral depression adjoining the scutellum.

6. **Dicaulocephalus feæ.** (Plate I, fig. 1.)

Dicaulocephalus feæ, Gestro, Ann. Mus. Civ. Genova, (2) v, 1888, p. 626.

"Testaceous yellow, with the head nearly black; the pronotum shining, punctulated, and decorated with irregular, vague, nebulous markings; the elytra opaque, punctulated, marked only with a dark spot on the apical callus; the teeth and spines of the legs black, the tarsi pitchy black, with the terminal joint and claws pitchy; the body clothed beneath with long yellow hair."

Length, 24 mm.

Burma: Plapoo, Mt. Mooleyit, 3000–5700 ft. (*L. Fea*, March–April).

Type in the Genoa Museum.

Genus **PARASTASIA**.

Parastasia, Westw., Ann. Mag. Nat. Hist. viii, 1841, p. 204; id., Trans. Ent. Soc. Lond. iv, 1845, p. 91; Arrow, Trans. Ent. Soc. Lond. 1899, p. 479; Ohaus, Deutsche Ent. Zeits. 1900, p. 225.

Rutelarcha, Waterh., Ent. Mon. Mag. xi, 1874, p. 52.—Type, *R. quadrimaculata*, Waterh. (n. syn.).

Lutera, Westw., Trans. Ent. Soc. Lond. 1875, p. 236.—Type, *L. luteola*, Westw. (n. syn.).

Cyphelytra, Waterh., Cist. Ent. i, 1875, p. 367.—Type, *C. ochracea*, Waterh. (n. syn.).

Polymœchus, Lec., Proc. Acad. Philad. viii, 1856, p. 24.—Type, *P. brevipes*, Lec. (n. syn.).

Type, *Parastasia canaliculata*, Westw. (Philippine Is.).

Range. India, Ceylon, Malay Archipelago, Japan, Polynesia, North America.

The form is stout and massive, with short legs. The head is small, the clypeus very small, terminating in two reflexed teeth or lobes. The mandibles are long and exposed at the tips, which

are sharp and recurved, the inner edge having a close fringe of golden hairs. The mentum is elongate, slightly bilobed at the end and strongly constricted at the insertion of the palpi. The maxillæ are stout, densely clothed with golden hairs and armed with five or six very sharp teeth in three parallel ranges. The palpi are short with a large terminal joint. The antennæ are generally short, the 2nd to 7th joints very short and closely articulated, the 8th to 10th forming a small compact club. The front tibia is armed with three short teeth, the middle tibia is produced into a sharp spine externally at the end and the hind tibia has a strong transverse carina. The penultimate joint of the middle and hind tarsi is produced into a sharp point beneath. The mesosternum has a point in front, which is generally blunt and not produced, but sometimes forms a sharp process. In a Malayan species (*P. mirabilis*, Arrow) the female alone has a process.

This genus presents a considerable variety of form and structure, although constant in its essential features. It includes the great majority of the species belonging to the PARASTASIINI, and most of the allied genera may be regarded as especially modified recent offshoots of it. It is of peculiar interest for the very diverse and remarkable differences which distinguish the sexes of its various species. Many of these were described by me in 1899 ("Sexual Dimorphism in the Rutelid genus *Parastasia*," Trans. Ent. Soc. Lond. 1899, p. 479). The pronotum is usually more convex and parallel-sided in the female and produced into a slight neck in the male. The cleavage of the claws is also very often different in the two sexes, the females of many species having them quite simple, while the males have one claw upon each foot, or upon some of the feet, cleft.

The colours occurring in the genus are confined to shades of red or yellow and black, the brilliant metallic hues so prevalent amongst the allied New World genera, as well as in the ANOMALINI, being absent. In certain species (e. g. *P. rufopicta*, *P. basalis*, *P. andamanica*) there is a pattern of black and orange reminiscent of the combination characteristic of many EROTYLIDÆ, ENDOMYCHIDÆ, and other Coleoptera haunting decaying timber, and, although almost nothing has been recorded as to their habits, I have little doubt that many species of *Parastasia* are to be found in the same environment.

In my paper published in 1899 I found it necessary to unite with *Parastasia* several supposed genera the distinctive features of which were found only in one sex. I have now found myself obliged also to reject the names *Lutera*, *Cyphelytra*, *Rutelarcha* and *Polymœchus* having entirely failed to find characters of more than specific importance by which they can be separated.

The larva and pupa of *Parastasia confluens* were described and figured by Schiödte in 1874 (Naturhist. Tidskr. ix. p. 296, pl. x, figs. 1–10). They were found in large numbers by Roepstorff in a dead tree-trunk in the Andaman Islands.

Key to the Species.

1	(22)	Clypeus strongly bidentate in front.	
2	(13)	Pygidium everywhere densely sculptured.	
3	(10)	Pronotum smooth behind or only lightly punctured.	
4	(7)	Front tibia with the two upper teeth close together.	
5	(6)	Scutellum long and sharp-pointed; elytra without posterior yellow spot	*rufopicta*, Westw., p. 37.
6	(5)	Scutellum short and blunt; elytra with posterior yellow spot......	*birmana*, Arrow, p. 38.
7	(4)	Front tibia with the two upper teeth wide apart.	
8	(9)	Elytra not, or only very lightly, punctured	*basalis*, Cand., p. 39.
9	(8)	Elytra deeply punctured	*cingala*, Arrow, p. 39.
10	(3)	Pronotum strongly punctured.	
11	(12)	Pronotum not longitudinally impressed	*andamanica*, Ohaus, p. 40.
12	(11)	Pronotum longitudinally impressed.	*confluens*, Westw., p. 41.
13	(2)	Pygidium not everywhere densely sculptured.	
14	(17)	Clypeus very small, with sharp teeth or ridges at the base.	
15	(16)	Small and elongate	*heterocera*, Ohaus, p. 41.
16	(15)	Larger, broad and globose	*bimaculata*, Guér., p. 42.
17	(14)	Clypeus not very small, without sharp teeth or ridges at the base.	
18	(19)	Very small; pronotum coarsely punctured	*indica*, Ohaus, p. 43.
19	(18)	Not very small; pronotum finely punctured.	
20	(21)	Red, with the head black	*sulcipennis*, Gestro, p. 43.
21	(20)	Red, with the head, scutellum and base of elytra black............	*alternata*, Arrow, p. 45.
22	(1)	Clypeal margin bluntly bilobed.	
23	(24)	Elytra punctured in straight lines .	*luteola*, Westw., p. 45.
24	(23)	Elytra punctured in wavy lines ..	*ochracea*, Waterh., p. 46.

7. Parastasia rufopicta. (Plate I, fig. 4.)

Parastasia rufopicta, Westw.,* Proc. Ent. Soc. Lond. 1841, p. 53; id., Trans. Ent. Soc. Lond. iv, 1845, p. 93, pl. 6, fig. 3.

Black, extremely smooth and shining above, with a ragged transverse orange band crossing the elytra from side to side upon their anterior half, immediately behind the scutellum, and sending two small branches forward to the front edge of the elytra.

The body is rather broad, compact and very convex. The head is irregularly rugose, armed with two sharp reflexed teeth at the front margin and a slighter one at each end of the clypeal

* An asterisk after the name of a species indicates that a type or co-type has been examined.

suture. The pronotum is sparingly punctured, except near the base, and its lateral margins are strongly convergent in front and nearly parallel behind, with the hind angle nearly rectangular. The scutellum is rather long and pointed at the apex, and bears a few minute punctures. The elytra are exceedingly smooth and bear slight traces of longitudinal lines of punctures upon their posterior half. The two upper teeth of the front tibia are placed close together and the outer claw of the middle and hind tarsi is cleft.

♂. The middle of the prothorax is prolonged, forming a slight neck behind the head. The propygidium and pygidium are moderately shining, the former closely covered with minute punctures and the latter finely rugose at the sides and sparsely punctured in the middle.

♀. The apical part of the scutellum is dull and iridescent. The propygidium and pygidium are densely granular and the former has a very peculiar opaque and sooty surface.

Length, 19–25 mm.; breadth, 12–14 mm.

SIKKIM: Mungphu (*E. T. Atkinson*); ASSAM: Sylhet, Naga Hills (*W. Doherty*), Manipur (*W. Doherty*), Sibsagar (*S. E. Peal*).

Type in M. René Oberthür's collection.

8. Parastasia birmana.

Parastasia birmana, Arrow,* Trans. Ent. Soc. Lond. 1899, p. 481, pl. 17, figs. 3 & 4.

Black, extremely smooth and shining above, with a zigzag transverse orange band upon the anterior half of each elytron (extending to the front margin and the scutellum in the female, but not in the male), and a small orange spot towards the extremity.

It is convex and moderately elongate in shape. The head is strongly rugose, with two sharp reflexed teeth at the front edge and a slighter one at each end of the clypeal suture. The pronotum is smooth at the base, lightly punctured in front and more strongly at the sides (especially in the ♀). The lateral margins are strongly convergent in front and nearly parallel behind, with the hind angles nearly right angles. The scutellum is short, blunt and very smooth. The elytra are very smooth, with scarcely perceptible lines of punctures. The propygidium and pygidium are densely sculptured and opaque. The two upper teeth of the front tibia are placed close together and the outer claw of the middle and hind tarsi is cleft.

♂. The pronotum is less convex and more produced in front. The elytra are straight at the posterior edge and the orange band is narrow and ∼-shaped.

♀. The sutural angles of the elytra are acutely produced and the orange band is broad, extending to the basal margin and the scutellum. The edge which adjoins the latter is opaque.

Length, 21–23 mm.; breadth, 12–13 mm.

BURMA; S.W. CHINA: Yunnan; INDO-CHINA: Kiang-Kwang (*R. Vitalis de Salvaza*, March).

Type in the British Museum.

9. Parastasia basalis.

Parastasia basalis, Cand.,* Coleopt. Hefte, v, 1869, p. 44.
Parastasia duponti, Arrow, Trans. Ent. Soc. Lond. 1899, p. 484 (n. syn.).
Parastasia binotata, Burm., Handb. Ent. iv, 1, 1844, p. 374.

Black, with the pronotum sometimes blood-red or very dark pitchy red, the abdomen generally pitchy red, and an orange-coloured transverse band crossing the base of the elytra, occupying rather less than half their length and extending almost to the outer margins posteriorly, but not anteriorly.

The body is parallel-sided, cylindrical and elongate. It is very smooth and shining above, and the sides of the body beneath are clothed with a short tawny pubescence. The head is coarsely and irregularly punctured and armed along the front margin of the clypeus with four sharp reflexed teeth, the two middle ones being longer and nearer together than the other two, which occupy the ends of the clypeal suture. The pronotum is very transverse and globose and is rather closely and irregularly punctured, except along the basal margin. The scutellum bears only a few very fine punctures, and the elytra are quite smooth in the female and bear a few inconspicuous imperfect punctured striæ and numerous fine irregular punctures near the suture. The mesosternum projects a very little beyond the middle coxæ as a broad sharp-pointed process. The outer claw of the middle and hind feet is bifurcated.

♂. The orange elytral band occupies the anterior third of the length. The prothorax is a little produced behind the head and the pronotum is widest at the hind angles. The pygidium is very finely and densely transversely strigose.

♀. The orange band occupies nearly half the length of the elytra. The sides of the pronotum are nearly parallel behind, and the pygidium is thinly clothed with erect tawny pubescence.

Length, 17–18 mm.; breadth, 9–10 mm.

CEYLON: Peradeniya (*E. E. Green*, Oct.), Kandy (*E. E. G.*, Nov.), Anurhadapura (*E. E. G.*, April), Kelani Valley, near Colombo (*W. Braine*); MADRAS: Sanivarsandai, 4000 ft., Coorg (*T. V. Ramakrishna*, April), Shevaroy Hills, Yerkaud, 4500 ft. (*T. V. R.*).

Type in the Brussels Museum.

10. Parastasia cingala.

Parastasia cingala, Arrow,* Trans. Ent. Soc. Lond. 1899, p. 482.

Black or deep brown, with the pronotum and a narrow irregular transverse band crossing the elytra before the middle bright vermilion-red.

It is rather small in size, convex and cylindrical in shape, smooth and shining above, and the sides of the body beneath are clothed with not very thick tawny pubescence. The head is coarsely and confluently punctured, and the front margin of the clypeus bears two sharp reflexed inner teeth and two feebler outer ones. The pronotum is very convex and strongly punctured, except near the basal margin, where it is only very finely punctured. The scutellum is very minutely punctured, and the elytra bear longitudinal lines of deep but uneven punctures; the subsutural interval is broad and irregularly punctured. The pygidium is finely transversely rugulose and opaque. The mesosternum is scarcely produced. The outer claw of the middle and hind tarsi is bifurcated.

♂. The body is shorter and less cylindrical in shape. The pronotum is short, contracted in front and widest at the base. The red elytral band sends two branches forward to the anterior margin.

♀. The pronotum is rather long and parallel-sided and much more closely and rugosely punctured than in the male. The elytra are more coarsely punctured and the red band is more compact. The pygidium is clothed with short erect yellow hair.

Length, 14–16 mm.; breadth, 8–9·5 mm.

CEYLON: Dikoya, 3800–4200 ft. (*G. Lewis*, Dec.–Jan.), Colombo.

Type in the British Museum.

11. Parastasia andamanica.

Parastasia andamanica, Ohaus, Stett. Ent. Zeit. 1898, p. 13; Arrow, Trans. Ent. Soc. Lond. 1899, p. 483, pl. xvii, figs. 7 & 8.

Brick-red (♂) or black (♀) above and beneath, with an orange shoulder spot consisting of an oblique bar adjoining the scutellum and a curved lobe extending from the middle of the bar to near the outer margin.

The form is cylindrical and convex. The head is densely rugose, and the two apical teeth are short but sharp and placed close together; there is also a small tooth on each side of the head above the antennal orbit. The pronotum is closely punctured all over. The scutellum bears a few minute punctures, and the elytra have a wide, irregularly punctured space near the suture and rather close strongly punctured striæ externally. The pygidium is densely and minutely strigose. The mesosternum is not produced. The legs are very short, and the outer claw of the four posterior feet is cleft, the inner branch being much shorter than the outer.

♂. The ground-colour is brick-red. The prothorax is narrowed anteriorly.

♀. The ground-colour is black and the form more elongate.

The pronotum is much more convex than in the male and not narrowed anteriorly.

Length, 12–13 mm.; breadth, 7·5–8 mm.

Andaman Is. (*Roepstorff*, *Atkinson*, *Wimberley*).

Type in Dr. F. Ohaus' collection.

12. Parastasia confluens.

Parastasia confluens, Westw.,* Ann. Mag. Nat. Hist. viii, 1841, p. 304.

Light mahogany colour (♂) or deep brown (♀), with an irregular-shaped lighter patch before the middle of each elytron.

Cylindrical and convex, with the legs exceedingly short. The head is densely granulated, the pronotum strongly gibbous and very rugose, with a median longitudinal groove. The lateral margins bulge strongly in the middle, and all the angles are obtuse. The scutellum is very finely and sparingly punctured, and the elytra bear distinct and entire punctured striæ. The pygidium is very finely and densely rugulose. The sternum, coxæ and femora are clothed with rather close, but short, tawny setæ.

♂. Chestnut-red, with the elytra lighter in colour, each having on the anterior half a rather indefinite yellow patch, near the anterior edge of which is a small black spot. The pronotum is produced into a short neck behind the head. The elytra are very shining, with lightly impressed striæ, and not very long, and the pygidium is nearly vertical. The front claws are simple and the outer claw of the four posterior feet divided, that of the middle ones broad.

♀. Very dark brown, with a small three-lobed yellow spot, surrounded by a black margin, upon the anterior half of each elytron. The pronotum is not narrowed in front, the elytra are longer and deeply striated, the pygidium oblique and prominent, and all the claws simple.

Length, 12–16 mm.; breadth, 7–8 mm.

Nicobar Is. (*Roepstorff*); Malay Peninsula; Sumatra; Borneo; Java; Celebes; Timor; Bouru; Philippine Is.

Type in the British Museum.

13. Parastasia heterocera.

Parastasia heterocera, Ohaus, Stett. Ent. Zeit. 1898, p. 27.

Black and shining, usually with the elytra or their posterior part blood-red.

The body is rather short and broad, and slightly depressed. The head is closely rugose, with a slight longitudinal median groove, the clypeus greatly reduced and armed at the extremity with two well-developed reflexed teeth. The pronotum is strongly

transverse, and very smooth and shining upon the disc. The scutellum is short, smooth and shining. The elytra bear nearly complete rows of punctured striæ. The pygidium is rugose at the sides and bears minute scattered punctures in the middle. The mesosternum is produced into a moderately long, curved and sharp-pointed process. The femora and tibiæ are very short, but the four hinder tarsi are moderately long. The outer claw of the four posterior feet is deeply cleft.

Fig. 10.
Parastasia heterocera, ♂.

♂. The terminal teeth of the clypeus are very strong and sharp. The prothorax is strongly narrowed in front, its sides only are rugose, the anterior angles are obtuse and the hind angles rather sharp.

♀. The head bears, besides the two terminal teeth, an additional short but sharp tooth on each side occupying the ends of the clypeal suture. The pronotum is strongly rugose at the front and side margins, and all its angles are obtuse.

Length, 9·5–12 mm.; breadth, 5–7 mm.

ANDAMAN IS.; NICOBAR IS. (*Roepstorff*, *Wimberley*); BURMA: Rangoon (*E. T. Atkinson*).

Type in Dr. F. Ohaus' collection.

14. **Parastasia bimaculata.**

Parastasia bimaculata, Guér., Delessert's Voyage, ii, 1843, p. 41, pl. 11, fig. 2.
Parastasia bimaculata, var. *nicobarica*, Ohaus, Deutsche Ent. Zeits. 1900, p. 233.

Reddish testaceous, with mottlings of a rather darker shade upon the elytra, the head and front tibiæ rather dark red, and a pair of black spots near the hind margin of the pronotum and not very far removed from each other.

It is very convex, short and subglobose in form. The clypeus is small and armed in front with two strong recurved teeth. The head is deeply channelled in front, strongly and rugosely punctured, and the pronotum bears moderately deep, irregularly scattered punctures, which are rather close in the anterior part but almost disappear near the base. The scutellum is broad, very obtuse at the apex, and almost smooth. The elytra bear coarse punctures, which form irregular and not equidistant longitudinal lines. The pygidium is finely punctured, the punctures becoming rugose at the sides. The metasternum is smooth in the middle and clothed at the sides with erect and rather close pale yellow hair. The mesosternum forms a sharp but very short process, and the claws are all undivided.

♂. The eyes are very large and prominent, and the pronotum longer and less rounded above than in the female.

Length, 13–16 mm.; breadth, 8–9 mm.

ANDAMAN and NICOBAR Is. (*Roepstorff*); BURMA: Rangoon; MALAY PENINSULA; SUMATRA; BORNEO; CELEBES; GILOLO; TERNATE; CERAM; NEW GUINEA; SOLOMON IS.

15. Parastasia indica.

Parastasia indica, Ohaus, Stett. Ent. Zeit. 1898, p. 9; id., Deutsche Ent. Zeits. 1900, p. 256.

Purplish black, with a large roundish bright yellow patch in each hind angle of the pronotum.

It is small, shortly oval, convex, and very smooth and shining. The vertex of the head is strongly punctured, and the clypeus and forehead are rugose. The clypeus is nearly semicircular in shape, with the front margin produced into two rather blunt reflexed lobes. The pronotum is rather coarsely punctured in front, more sparingly in the middle, and almost smooth near the hind angles; the lateral margins are angulated near the middle and the front and hind angles are obtuse. The scutellum is short and almost free from punctures, and the elytra have each five well-marked longitudinal lines of fine punctures, the second interval broad and irregularly punctured, the fourth moderately broad and divided by an incomplete series of punctures. The pygidium is rugosely punctured and shining in the median part, more closely rugose at the sides. The sides of the body beneath are finely rugose and scantily hairy, and the mesosternum is produced into a short but rather sharp process.

♂. The longer claw is cleft on all the feet, the front and middle tarsi are rather thick, the last joint enlarged, and the lower lobe of the outer middle claw is broad and blunt.

♀. The sculpture of the head and pronotum is coarser and closer, and the latter has a slight longitudinal channel in front.

Length, 10 mm.; breadth, 5 mm.

ASSAM: Sylhet; BHUTAN; TONKIN.

Type in Dr. F. Ohaus' collection.

I have seen only a specimen from the first locality. Dr. Ohaus also gives Calcutta, which is improbable.

16. Parastasia sulcipennis.

Parastasia sulcipennis, Gestro, Ann. Mus. Civ. Genova, (2) vi, 1888, p. 113.

Yellowish brown or light ochreous red, with the head, legs, and the greater part of the lower surface black; very shining above and thinly clothed beneath with fine yellow hairs.

It is compact and convex in shape. The head is rugosely punctured, with the clypeus continuous with the forehead and produced into two sharp strongly recurved teeth, the forehead impressed in the middle, and the vertex shining and finely punctured. The pronotum is finely and evenly punctured, with the sides angulated, the front angles very obtuse, and the hind

angles almost right angles. The scutellum is broader than it is long, obtuse-angled and minutely punctured, and the elytra bear on their dorsal part a slight transverse impression near the middle of each and five nearly equidistant punctured striæ. The propygidium and pygidium are very smooth and shining. The sides of the metasternum and the abdomen are very finely and densely strigose, and the mesosternum is produced into a short sharp process. The claws of the front feet are simple, and the longer one on the middle and hind feet divided.

♂. Yellowish brown above (except the head). The prothorax is a little narrowed in front and not very convex above, and the elytral striæ are very fine, with flat intervals. The mesosternum is slightly produced.

♀. Bright ochreous red above (except the head), larger and

Fig. 11.—*Parastasia sulcipennis*, ♂.

Fig. 12.—*Parastasia sulcipennis*, ♀.

much more massive, with the pronotum more convex and more distinctly punctured, the elytra broader behind, the five dorsal striæ very broad and strongly impressed, except towards their extremities, with narrow and convex intervals, and the sides decorated with fine and short oblique scratches. The mesosternum is distinctly produced.

Length, 18·5 mm.; breadth, 11 mm.

Assam: Chandkhira, Sylhet (*J. L. Sherwill*); Burma: Teinzo (*L. Fea*, May—type).

Type in the Genoa Museum.

This interesting species was described from the female only, although the sex is not mentioned in the original description. The male which I have here associated with it is described from a specimen taken, together with a female, by Mr. J. L. Sherwill. Although they appear at first sight to have little in common, I believe them to be truly conspecific. The male is smaller and less massively built, the pronotum less convex and less distinctly punctured, the elytra, instead of having the very deep grooves and narrow convex intervals of the female, are very finely striated, with wide flat intervals, and the mesosternal process is distinctly less sharp. They agree, however, in two peculiar, though not obvious,

characters: the very short and broad scutellum, and the clypeus almost in the same plane as the forehead and not separated from it by a carina. The male is closely similar to that of *P. unicolor*, Arrow, the female of which is also distinguished by much more strongly impressed dorsal striæ and a still more striking difference in colour. In *P. mirabilis*, Arrow, I have also called attention to similar sexual differences, including a longer mesosternal process in the female.

17. Parastasia alternata.

Parastasia alternata, Arrow, Trans. Ent. Soc. Lond. 1899, p. 489.

Orange-red, with the head, scutellum, the basal third of the elytra, the legs, and lower surface of the body black. The pronotum has an extremely narrow black marginal line all round it.

It is a moderately short, compact and very convex insect, very smooth and shining, with a clothing of rather short brownish hair at the sides of the metasternum. The clypeus is rugose and armed with two sharp recurved teeth in front, the forehead coarsely punctured, the eyes small, and the antennæ short. The pronotum is thinly and minutely punctured, very narrow in front, with the sides strongly rounded in the middle and nearly straight in front and behind, the front angles very obtuse, the hind angles nearly right angles, and the base gently trisinuated. The scutellum is almost unpunctured, and the elytra bear a subsutural line and three or four rather wide pairs of faint punctures, with similar scattered punctures in the intervals. The mesosternum forms a very slightly produced sharp point. The front tibia is armed with three sharp teeth, of which the two posterior ones are close together.

♂. Cylindrical, with the hind femora and all the tibiæ more slender than in the female, the outer claw of the middle and hind feet deeply cleft, and the pygidium minutely and scantily punctured.

♀. The body is shorter and broader, with all the claws entire, and the pygidium short and broad and strongly and coarsely punctured.

Length, 18–20 mm.; breadth, 10·5–12 mm.

United Provinces: Allahabad (?); Assam: Khasi Hills.

Type in the British Museum.

Like *P. ochracea*, this species was originally reported as inhabiting Allahabad, upon the authority of an old specimen from the Bowring Collection in the British Museum. Dr. Jordan has received it from the Khasi Hills, and I have little doubt that the other locality is incorrect.

18. Parastasia luteola.

Lutera luteola, Westw.,* Trans. Ent. Soc. Lond. 1875, p. 236, pl. 8, fig. 2.

Straw-coloured, with the extreme margins of the head, prothorax, scutellum and elytra, the divisions of the sternum and abdomen,

the tibiæ and tarsi, two spots upon the vertex of the head, a transverse row of six spots upon the anterior part of the pronotum, a short longitudinal mark in the middle of the posterior part, a spot in the middle of the anterior part of each elytron, an oblique line extending backwards from the humeral callus, and another upon the apical callus, black or brown. These markings are variable, and some of them are frequently absent.

It is a rather short and broad insect, not very convex, and very smooth above and beneath. The antennæ are rather long and slender. The head is coarsely and very scantily striolated, with the apex smooth, and the clypeus moderately large, broadly triangular and coarsely strigose, with the apical margin divided into two blunt, slightly reflexed lobes. The pronotum and scutellum are very finely and thinly punctured and the elytra bear inconspicuous lines of minute punctures. The prothorax is strongly transverse, not very convex, with the sides nearly straight, strongly convergent in front, well rounded behind, the front angles rather acute, the hind ones obtuse, and the base slightly lobed in the middle. The scutellum is very short and broad, with rounded sides. The pygidium is finely coriaceous; the metasternum is smooth and shining in the middle, and finely rugose and clothed with fine pale pubescence at the sides. The mesosternum is narrow between the middle coxæ and nearly vertical in front. The front tibia is stout and armed with three sharp teeth, the two terminal ones placed close together.

♂. Shorter and broader in shape, with the front tarsus thickened, the claw-joint enlarged and the inner claw dilated.

Length, 14–17·5 mm.; breadth, 8–9·5 mm.

NICOBAR IS. (*Roepstorff*); MALAY PENINSULA; SIAM; BORNEO, etc.

Type in the Oxford University Museum.

Ohaus records the species from the Himalayas, but this is probably incorrect.

19. Parastasia ochracea.

Cyphelytra ochracea, Waterh.,* Cistula Entom. i, 1875, p. 367.

Bright yellow, with the head, pronotum, scutellum, and patches upon the femora a little more deeply coloured, and with a small black spot on each side of the head between the eyes, one on each side of the pronotum and an anterior and posterior row of three (the median anterior spot double), a wavy line extending from the humeral to the apical callus of each elytron, a shorter one running parallel to the last posteriorly, two short longitudinal lines external to it, two oblique internal ones, and a small spot near the scutellum on each side, all black or nearly black. The edges of the clypeus, prothorax (before and behind), scutellum, elytra, pygidium, and the segments of the body beneath are also margined with black, and the tibiæ bear black patches.

The insect is oval in shape, very smooth and shining, and moderately convex. The head is scantily rugosely punctured, and the clypeus broadly triangular with its apical margin cleft into two lobes, of which the points are reflexed and not sharp. The eyes are not very close and the eye-ridges are feeble. The clypeal suture is strongly marked. The pronotum is very scantily and lightly punctured, with the lateral margins rounded, the front angles nearly right angles, the hind angles rather obtuse, and the base broadly trisinuated. The scutellum is broad and nearly smooth, with rounded sides. The elytra are very smooth and shining, with rows of large annular punctures, which are not as usual straight and parallel, but contorted, the black markings described being outlined by them. The pygidium is very finely punctured, and bears a few long hairs toward the apex. The metasternum is moderately thickly clothed with long yellow hair, and the mesosternum is not produced. The front tibia bears three acute teeth, the two apical ones approximated. The longer claw of each foot is minutely cleft at the tip.

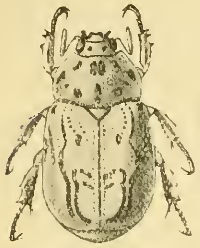


Fig. 13.—*Parastasia ochracea.*

♂. The antennæ are rather long, the club nearly as long as the footstalk. The front tarsus is a little thickened, and the inner claw broad and twice as long as the outer.

The female is unknown.

Length, 16·5 mm.; breadth, 10·5 mm.

SIKKIM: Darjiling; UNITED PROVINCES: Allahabad (?).

Type in the British Museum.

The contorted elytral striæ of this insect are highly peculiar and found in no other Lamellicorn beetle known to me.

The locality Allahabad borne by the type specimen from the old Bowring Collection is probably due to an error.

Genus **FRUHSTORFERIA**.

Fruhstorferia, Kolbe, Stett. Ent. Zeit. lv, 1894, p. 3.

TYPE, *Fruhstorferia javana*, Kolbe (Java).

Range. Burma, Indo-China, Java.

Body rather short and massive, broad, and not very convex. Head moderately large, with the eyes wide apart and not very prominent, and with more or less prominent ridges in front of them. Antennæ short, joints 3 to 7 very short, progressively diminishing. Clypeus rather long, narrowed, with the front margin entire. Pronotum broad, scarcely lobed behind. Prosternum produced into a strongly-elevated vertical process behind the front coxæ. Mesosternum not produced. Legs rather short and stout; front tibia abruptly excised at the base internally and armed with three sharp teeth externally; middle and hind tibiæ

not, or only feebly, spinose at the outer edge; tarsi short, with the outer, middle and hind claws deeply bifid.

♂. Body shorter than that of the female. Mandibles produced in the horizontal plane and strongly curved, the tips approximating and generally turned slightly upwards. Clypeus deflexed between the mandibles, and the labrum more or less uncovered. Pronotum shorter than in the female. First four ventral segments greatly contracted, the last two moderately long. Pygidium incurved and completely covered by the elytra. First four joints of the front tarsus very short and broad, the fourth with an internal lobe; claw-joint very large and strongly curved, the inner claw large and entire.

♀. Longer in shape. Clypeus more triangular. Elytra thickened near the middle of the outer margins. Pygidium prominent, not covered by the elytra. Inner front claw bifid or toothed.

The second Indian representative of this genus differs in many important particulars from the typical species, and it may be necessary eventually to separate it generically, but this point can only be decided when the discovery of more specimens has made it more adequately known.

Key to the Species.

Light-coloured; hind legs slender	*dohertyi*, Ohaus.
Dark-coloured; hind legs short and thick	*birmanica*, Arrow.

20. Fruhstorferia dohertyi.

Fruhstorferia sexmaculata, Kraatz, var. *dohertyi*, Ohaus, Deutsche Ent. Zeits. 1905, p. 98; Pouillaude, Insecta, 1915, p. 15.

Pale greenish yellow, with the mandibles, tarsi, abdomen, the extreme margins of the clypeus, prothorax (in front and behind), and scutellum, and a small spot upon the apical callus of each elytron, mahogany-red.

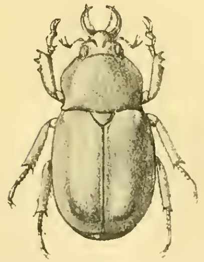


Fig. 14.—*Fruhstorferia dohertyi*, ♂.

It is rather elongate in shape and not very convex, and the lower surface is clothed, not very thickly, with short, pale yellow hair. The head is not large, and the clypeus is produced as a narrow rounded lobe between the mandibles. The forehead is shining, very scantily punctured, and has a vague triangular depression in the middle. The ante-ocular lobes are slightly prominent and bluntly pointed. The pronotum is rather sparingly but evenly punctured, its sides are very strongly bisinuated, the front angles slightly and the hind angles very strongly acute, and the base broad and feebly rounded in the middle. The scutellum is small and very finely punctured. The elytra are shining, irregularly and moderately

closely punctured, with their apices rounded and the apical calli prominent. The femora and tibiæ are slender, the front tibiæ stouter, and armed with three sharp teeth, the middle and hind tibiæ smooth, without ridges or spines at the outer edge. The tarsi are slender, but short. The pygidium is shining and very sparsely clothed with minute hairs.

♂. The mandibles are slender, acutely pointed, and calliper-shaped.

I have not seen the female, which, according to Ohaus, is uniformly light reddish-brown above, coarsely punctured, and scarcely shining, with the femora and tibiæ yellow, and without any lateral thickening of the elytra.

Length (without mandibles), 17 mm.; breadth, 9·5 mm.

Burma: Ruby Mines (*W. Doherty*).

Type in Dr. F. Ohaus' collection.

The only specimen of this species that I have seen (in the British Museum) probably represents a minor development, and the mandibles may be found to attain considerably larger dimensions. The species bears a very close resemblance to the Indo-Chinese *F. 6-maculata*, Kraatz, but it is narrower in shape, the head and scutellum are smaller in proportion, the elytra are uniformly shining, instead of dull at the sides, and their apices are rounded, instead of being squarely truncated. The triangular depression on the head is also peculiar. The mandibles of the small specimen here described are about 3 mm. long. In a well-developed specimen of *F. 6-maculata* they measure about 15 mm., and it is quite possible that they attain a similar or even greater development in the present species. Ohaus gives the dimensions of the male as 17·5 to 20 mm. in length, 9·5 to 11 mm. in breadth, but omits to say whether, as is probable, the mandibles are excluded. The female measures 15 to 20 mm. long by 9 to 10·5 mm. broad.

21. Fruhstorferia birmanica.

Fruhstorferia birmanica, Arrow, Ann. Mag. Nat. Hist. (7) xix, 1907, p. 354.

Deep red, with the lower surface and legs a little paler in colour, except the tarsi, which are dark. The lower surface and pygidium are fairly closely clothed with tawny hair.

It is a short, compactly built, and moderately convex insect with short stout legs, each of the four posterior tibiæ bearing a transverse spinose ridge on its outer face, the hind tibia broadest at the end, and the hind femur very short and thick. The short tubercular prosternal process is tufted at the end.

♂. Very short, robust, and parallel-sided, with the head coarsely punctured, the clypeus small, narrowed and rounded at the apex, the mandibles produced (about as long as the head), strongly recurved and acute at the tips. The prothorax is transverse, rather strongly punctured, with the sides parallel behind,

and the base feebly trisinuated. The scutellum is very short and finely punctured. The elytra bear strong and irregular punctures, some of which form lines. The pygidium is turned inwards and sparingly punctured. The front tarsi are thickened, and the outer claw much larger than the inner one.

♀. Longer and more oval, with the mandibles not produced or acute, the head more rugose, and the prothorax, elytra, and

Fig. 15.—*Fruhstorferia birmanica*, ♂.

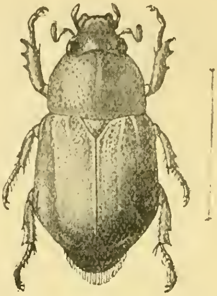


Fig. 16.—*Fruhstorferia birmanica*, ♀.

pygidium more coarsely and closely punctured. The elytra have a small but well-marked thickening beyond the middle of the outer edge and the pygidium is prominent.

Length, 17–20 mm.; breadth, 9·5–10·5 mm.

Burma: Ruby Mines (*W. Doherty*—type), Chin Hills, Haka (*F. E. Venning*, August).

Type in the British Museum.

Except in the shape of the head and the enlarged calliper-shaped mandibles of the male, this peculiar species has little superficial resemblance to the preceding one.

Genus **DIDREPANEPHORUS**.

Didrepanephorus, Wood-Mason, Ann. Mag. Nat. Hist. (5) ii, 1878, p. 421.

Type, *Didrepanephorus bifalcifer*, Wood-Mason.

Range. Assam.

Very compact and convex in form, with rather short and thick legs, and entirely clothed above and beneath, including the legs, with moderately short but close hair, very short and velvety upon the scutellum and elytra. The clypeus is narrow and rather long, the eyes wide apart and not prominent, with strongly developed ridges in front. The antennæ are 10-jointed and moderately long. The pronotum is very tumid, with a slight median depression, the sides angulated in the middle, and the base broadly and gently lobed. The scutellum is rather wider than long, with curvilinear sides. The elytra are short, with their apical margins

becoming rather abruptly vertical. The lower surface and legs are, like the upper surface, closely pubescent. The prosternum forms behind a slightly prominent, but scarcely elevated lobe, and the mesosternum is not produced. The front tibia is short, abruptly excised at the base, and armed with three sharp teeth externally, the two terminal ones close together. The middle and hind tibiæ are without distinct ridges or spines at the outer edges. The joints of the tarsus, except the claw-joint, are very short, and the outer claw on each of the four posterior feet is deeply bifid.

♂. The clypeus is bent downwards at an angle to the front and between the enormously enlarged mandibles, which are produced forwards and upwards as a pair of sharply-pointed, strongly-curved tusks, parallel to each other, and probably capable of little or no movement. Each bears a sharp tooth a little beyond the base upon the upper edge, pointing obliquely outwards and forwards. The four basal joints of the front tarsus are extremely short and broad, and the fourth bears a broad internal lobe, which is finely striated upon the upper surface; the claw-joint is very greatly enlarged and strongly curved, and the inner claw is very large, not toothed, and folds back so that its tip rests upon the lobe of the penultimate joint (see fig. 6). The four basal joints of the abdomen are excessively short, the last two moderately long, and the pygidium very convex and strongly incurved, so as to be almost invisible from above.

♀. The clypeus is feebly bilobed and reflexed, the mandibles of normal size and slightly bilobed laterally. The abdomen is moderately long, not completely covered by the elytra, with the pygidium rather short and not very convex. The inner front claw bears a short tooth near the middle of its lower edge.

22. Didrepanephorus bifalcifer. (Plate I, figs. 5 & 6.)

Didrepanephorus bifalcifer, Wood-Mason,* Ann. Mag. Nat. Hist. (5) ii, 1878, p. 423, fig.

Yellowish brown, with the head and scutellum reddish, and the elytra becoming gradually darker near the posterior margins, but the dark colour ending abruptly before the terminal declivity, which, with the pygidium, legs, and lower surface, is pale yellow in colour.

The body is rather cylindrical in shape, but not very long. The pubescence with which it is everywhere clothed is fairly long upon the head, legs, and lower surface, and shortest upon the scutellum and elytra. Upon the latter irregular scattered punctures are visible. The pronotum is relatively large and strongly humped above in both sexes, with the sides strongly angulated in the middle and nearly straight from there to the front angles, which are acutely produced, and to the hind angles, which are obtuse. Both front and hind margins are trisinuated.

♂. The body is shorter and broader than that of the female,

the pronotum less attenuated in front, the elytra more parallel-sided and ending more abruptly behind. The mandibles (in the type-specimen) are about as long as the head and pronotum together.

♀. The head is more rugose and more hairy than that of the male. The pronotum is more narrowed in front and broader behind, and clothed on each side of the middle line with rather long and rough yellow hair, like that upon the head. The elytra are a little less velvety, slightly dilated near the middle of the sides and narrowed behind.

Length (without mandibles), 21 mm.; breadth, 10·5–11·5 mm.

ASSAM: Wakidgaon, near Sadiya.

Type in the British Museum.

Nothing is known of the habits of this remarkable insect. The female is now described for the first time, a specimen having been found, together with a newly-emerged and deformed male, by Col. W. F. Badgley.

Division III. ANOMALINI.

This group contains the great majority of the known species of Old World RUTELINÆ and almost all the brilliantly coloured Indian representatives of the subfamily belong to it. Although luxuriating most of all in the Oriental Region, the group is found in all parts of the World except Australia, New Zealand, and the Western slope of the South American mountain-chain. All the species are probably root-feeders in the larval, and leaf-feeders in the adult, condition.

Extremely varied in their outward form, these insects are yet easily recognised and form a very well-defined group. The antennæ consist of nine joints only. The clypeus is reflexed at the front margin and generally broadly rounded or semicircular, but occasionally narrowly produced and snout-like, and still more rarely a little excised in the middle. The labrum is horizontal, generally slightly excised at the middle of the front edge and conterminous with the clypeus. The mandibles are rounded externally and do not extend beyond the clypeus when in repose. The maxilla is short and armed with several sharp teeth, generally forming three successive parallel series at right angles to the axis. The mentum is broad and emarginate in front. The prothorax is generally either broadly lobed or narrowly excised at the middle of the hind margin, and may or may not have an elevated process beneath just behind the front coxæ. The mesosternum may or may not be produced forward between the middle coxæ. The elytra are fringed externally with a narrow colourless membranous border. The last spiracle on each side is placed midway between the front and hind margins of the penultimate segment. The legs are very variable, stout or slender, the front tibiæ generally armed with two external teeth (but sometimes with three or only one). The claws are variable, the hind ones always undivided, the longer

one of the middle feet generally, and that of the front feet almost always, cleft. Occasionally the male has the claws all simple.

In the male the apical tooth of the front tibia is generally shorter and sharper than in the female, and the inner front claw more or less dilated and distorted. In a few species the clypeus of the male is straight in front with sharp angles (*Anomala dorsalis*, *hindu*, etc.).

Key to the Genera.

1 (20)	Clypeus not produced into a truncate rostrum.	
2 (9)	Pronotum excised before the scutellum.	
3 (8)	Sides of thorax and elytra not continuous; small species.	
4 (7)	Hind coxæ not acutely produced at the base.	
5 (6)	Narrowly elongate; teeth of the front tibia separated by an acute notch	DACTYLOPOPILLIA, g. n., [p. 56.
6 (5)	Short; teeth of the front tibia not separated by an acute notch .	POPILLIA, Serv., p. 58.
7 (4)	Hind coxæ acutely produced at the base	CALLISTOPOPILLIA, Oh., [p. 92.
8 (3)	Sides of thorax and elytra evenly and continuously curved; large species	MACROPOPILLIA, Oh., p. 94.
9 (2)	Pronotum not excised before the scutellum.	
10 (11)	Mesosternal epimera interposed between the prothorax and elytra	TRICHANOMALA, g. n., p. 95.
11 (10)	Mesosternal epimera not interposed between the prothorax and elytra.	
12 (13)	Pronotum and elytra very flat, the former widest at the hind angles	SPILOPOPILLIA, Kr., p. 96.
13 (12)	Pronotum and elytra not very flat.	
14 (19)	Eyes not oblique; clypeus not excised (except in *Anomala bengalensis*, *anguliceps*, *bilobata* and *fissilabris*).	
15 (16)	Prosternum strongly elevated and bent abruptly forward	MIMELA, Kirby, p. 102.
16 (15)	Prosternum rarely elevated and never bent abruptly forward.	
17 (18)	All the tibiæ armed with terminal spurs	ANOMALA, Sam., p. 126.
18 (17)	Front tibiæ without spur, middle and hind tibiæ with one or none.	ANOPLANOMALA, g. n., [p. 98.
19 (14)	Eyes oblique; clypeus biangulate.	MICRANOMALA, Arr. p. 100.
20 (1)	Clypeus produced into a truncate rostrum.	
21 (22)	Pronotum not broadly transverse, more or less hairy	TROPIORRHYNCHUS, Bl., [p. 54.
22 (21)	Pronotum broadly transverse, not hairy	RHINYPTIA, Burm., p. 268.

Genus TROPIORRHYNCHUS.

Tropiorrhynchus, Blanch., Cat. Coll. Ent. Mus. Paris, 1850, p. 176.
Dinorhina, Lacord., Gen. Col. iii, 1856, p. 325.

TYPE, *Anisoplia orientis*, Newm.

Range. Bombay.

Body rather short, with long legs, and the under surface densely clothed with decumbent pale hair. The clypeus is narrow, with the sides of the posterior part rapidly converging and the anterior part forming a narrow recurved rostrum, the front margin rounded and slightly dilated and the middle line longitudinally carinate. The eyes are rather prominent. The prothorax is narrow, with the sides parallel or contracted behind, the front angles acute and the base very gently rounded or feebly emarginate in the middle. The scutellum is rather short. The shoulders of the elytra are prominent, the membranous margins distinct and the apical angles rather blunt. The mesosternum is pointed, but not produced beyond the middle coxæ. The pygidium is very convex. All the tibiæ are rather long and cylindrical (not flattened). The front ones are armed with two sharp teeth and the four posterior ones taper slightly towards the end and are scarcely spinose. The terminal joint of each tarsus is very long, and the claws are very long, slender and unequal, the longer one of the front feet only in *T. orientis*, and of the front and middle feet of *T. podagricus*, minutely cleft at the tip.

♂. The body is narrower, the prothorax longer, the legs are very long and stout, and the larger hind claw has an internal flange.

This is a modified form of the common Palæarctic genus *Anisoplia*.

Although the two known species of *Tropiorrhynchus* are closely similar, they are distinguished by considerable structural differences. The generic diagnosis of Blanchard applies only to *T. orientis*, Newm., although he included *T. podagricus*, Burm., by name and gave characters supposed to be those of its female, but really of a variety of *T. orientis*.

Key to the Species.

Mesosternum produced; hind trochanters simple; pronotum entirely hairy, broad at the base; longer claw of the front foot cleft	*orientis*, Newm.
Mesosternum not produced; hind trochanters spinose; pronotum narrowed at the base, decorated with patches of hairs; longer claws of the front and middle feet cleft	*podagricus*, Burm.

23. Tropiorrhynchus orientis. (Plate I. fig. 2.)

Anisoplia orientis, Newm.,* Entom. Mag. v, 1838, p. 384; Burm., Handb. Ent. iv, 1, 1844, p. 226.

Metallic green or testaceous with a metallic suffusion, the head and tarsi darker, the femora and tibiæ orange. The elytra are

yellow, with a sutural stripe, a narrow outer marginal line, a crescent traversing the suture in the anterior half and directed forwards, and an oblique line extending from each shoulder almost to the extremity, black; these dark markings are frequently red instead of black. The whole surface of the pronotum is clothed with erect yellowish pubescence, and there is a tuft of yellow hairs on each side of the head between the eyes. The whole of the lower surface, the femora and the pygidium (except a longitudinal smooth line along the middle of the latter) are densely clothed with decumbent white hair.

The head is finely and densely granular except upon the vertex, where it is strongly punctured. The pronotum is closely and rugosely punctured, rather square in shape, with the sides angulated before the middle and parallel from there to the base, which is feebly emarginate in the middle; the front angles are acute and the hind angles nearly right angles. The scutellum is finely punctured on each side. The elytra are deeply punctate-striate, the intervals being smooth and convex, and the fifth and sixth striæ closely approximating behind. The longer claw of the front foot is cleft at the tip. The pygidium is punctured at the sides and smooth and shining in the middle.

♂. The four hinder tarsi are longer than those of the female, the front ones shorter and their longer claws blunt and only very minutely cleft at the tip.

Length, 11–12 mm.; breadth, 6–7 mm.

Bombay: Kanara (*T. R. D. Bell*), Belgaum (*H. E. Andrewes*); Punjab: Simla (Berlin Ent. Mus.); Baluchistan: Chaman (*E. T. Atkinson*, April).

Type in the British Museum.

24. Tropiorrhynchus podagricus.

Anisoplia podagrica, Burm., Handb. Ent. iv, 1, 1844, p. 226.

Deep metallic green, with the elytra black and each marked with an anterior and a posterior pale yellow patch near the suture, the former extending to and along the front margin and occasionally uniting with the latter. Additional pale marks may appear near the sides of the elytra, or all may be absent. Pale specimens are also found in which the ground-colour, instead of being dark, is reddish, with a slight metallic green lustre, except upon the elytra. The lower surface is densely clothed with whitish decumbent hair and there are similar but less closely set hairs upon the femora, the circumference of the pygidium, at the inner edge of each eye, on a triangular patch on each side of the front margin of the pronotum and also at the hind angles.

The body is narrower and more parallel-sided than in *T. orientis*. The head is finely and densely granular. The pronotum is densely and rugosely punctured, the sides being contracted from before the middle to the base, which is gently and uniformly curved, the front angles are acute and the hind angles nearly right angles.

The scutellum bears a few fine punctures and is strongly depressed anteriorly. The elytra are deeply punctate-striate, the second and third intervals being wider than the rest, and the former aving an incomplete row of punctures anteriorly. The pygidium is very convex and bears fine scattered punctures. The longer claw is cleft at the tip in the front and middle feet, and the trochanters of the hind legs are produced into spines.

♂. The elytra are rather narrow and parallel-sided, the legs very long, the hind tibiæ inflated, the hind femora rather narrow at the end, and the hind trochanters produced into strong spines.

Length, 11·5–13·5 mm.; breadth, 5·5–6·5 mm.

Bombay (*Col. Whitehill*); Kashmir (according to Burmeister).

Type in the Halle Museum.

DACTYLOPOPILLIA, gen. nov.

Type, *Popillia virescens*, Hope.

Range. Himalayas.

The form is convex, long and narrow, especially the hinder part of the body, of which the shoulders are not very prominent. The prothorax is very gently excised before the scutellum, and the mesosternum forms a broad lamina between the coxæ. The pygidium is setose, but tufted only in *D. virescens*. The legs are robust and the front tibiæ armed with two sharp and slender teeth, placed very obliquely at the extremity, close together and separated only by a very acute notch. All the claws are rather long and slender.

The male has the teeth of the front tibia more acute, the inner front claw excised at the base, dilated and cleft, and the remaining claws simple.

The female has the legs more slender and the longer claw of the front and middle feet cleft.

In other respects the characters are those of *Popillia*.

Key to the Species.

1 (4) Pronotum punctured, shining.	
2 (3) Pygidium lightly punctured, with small basal tufts	*virescens*, Hope, p. 56.
3 (2) Pygidium rugose with the sides hairy.	*blanchardi*, Ohaus, p. 57.
4 (1) Pronotum rugose, dull..............	*opacicollis*, Kraatz, p. 58.

25. Dactylopopillia virescens.

Popillia virescens, Hope,* Gray's Zool. Miscell. 1831, p. 23; Newm., Trans. Ent. Soc. Lond. iii, 1841, p. 44.

Popillia truncata, Redt.,* Hügel's Kaschmir, 1848, iv, 2, p. 527.

Deep metallic green or golden green with the elytra orange and lightly suffused with a metallic lustre. The femora and tibiæ are metallic green and the tarsi dark red.

It is convex and rather elongate, scarcely dilated behind the shoulders. The clypeus is densely granular, short and broad, and almost rectangular in shape, with the front margin almost imperceptibly indented in the middle, the forehead closely and rugosely

punctured, and the vertex of the head strongly and rugosely punctured. The pronotum bears strong and close punctures all over, which become coarser and partly confluent at the sides and finer in the posterior median part. The scutellum is moderately punctured and the elytra are deeply striated, the subsutural interval being broad and irregularly punctured in its anterior half, the punctured area gradually contracting to form a deep median stria upon the posterior half. The fourth interval bears a nearly complete median row of punctures. The elytra are without a distinct lateral flange. The pygidium is strongly punctured, the punctures becoming rugose at the sides; it is decorated at the base with a pair of rather small roundish patches of pale hairs and similar hairs clothe the sides of the abdominal segments. The mesosternal process is laminar, bluntly pointed and only feebly produced. The front tibia is moderately long and armed with two long teeth arising close together and directed forwards; the claws are long and the longer one rather blunt.

Fig. 17.—*Dactylopopillia virescens.*

♂. Both teeth of the anterior tibia are very sharp. The claws are long, the longer one of the front feet excised near the base and cleft at the apex.

♀. The apical tooth of the front tibia is long and not very acute. The longer claw of the front and middle feet is cleft at the apex.

Length, 12–14 mm.; breadth, 6–7 mm.

SIKKIM: Upper Teesta Valley, 1000–4000 ft.; Darjiling (*Fruhstorfer*, June), Mungphu (*Atkinson*), Soom (Carmichael Coll.), Pedong (*Desgodins*), Kurseong, Gopaldhara, Rungbong Valley (*H. Stevens*); NEPAL (type).

Type in the British Museum; that of *P. truncata* in the Vienna Museum.

26. Dactylopopillia blanchardi.

Popillia blanchardi, Ohaus,* Stett. Ent. Zeit. lviii, 1897, p. 348.

Very dark metallic green or green-black, with the upper surface of the head and thorax rather brighter green, the elytra pale yellow, and the clypeus, antennæ and legs orange, with a faint metallic lustre.

The body is elongate in shape, rather parallel-sided and convex. The head is densely rugose, with the clypeus small and nearly straight in front. The pronotum is very transverse, coarsely punctured (rather rugosely at the sides), with the lateral margins strongly curved and approximating in front and behind, the front angles very sharp and the hind angles very obtuse; the base has a very fine marginal stria and is very slightly excised in front of

the scutellum, the latter being short and rather strongly punctured. The elytra have five dorsal striæ and a very nearly complete row of confluent punctures upon the subsutural interval, which is not much wider than the rest. The propygidium, pygidium and body beneath are rather evenly clothed with decumbent grey hairs, but the apex of the pygidium and a narrow median line at its base are bare. The mesosternum is not produced, but forms a rectangular lamina between the middle legs. The legs are stout, the front tibiæ being armed with two sharp slender oblique teeth, separated by a very acute notch.

♂. The inner front claw is long, broad and cleft at the apex.

Length, 10 mm.; breadth, 6 mm.

ASSAM: Khasi Hills (Berlin Entomological Museum).

Type in Dr. F. Ohaus' collection.

27. Dactylopopillia opacicollis.

Popillia opacicollis, Kraatz,* Deutsche Ent. Zeits. 1892, p. 272.

Dark metallic green or æneous black, with the head and pronotum a little brighter green, and the elytra and legs bright orange with a slight metallic suffusion.

The clypeus is densely rugose, short and transversely rectangular, with the front margin nearly straight. The forehead is rugosely punctured in front, and very strongly and closely punctured behind. The pronotum is very densely granular, with a very narrow elevated ridge along the middle; the sides are rather abruptly angulated before the middle and nearly straight from there to the angles, of which the front are very acute and the hind obtuse; the sides are nearly parallel from the lateral angulation to the hind angles, and the base is very feebly excised before the scutellum. The latter is rather strongly punctured. The elytra have five punctured dorsal striæ and the subsutural interval is broad and irregularly punctured. The pygidium is rather evenly clothed with not very close decumbent white hair, and the body beneath is similarly clothed with rather longer and looser hair.

♂. The inner front claw is long, broad, and rather deeply cleft at the apex.

Length, 10–12 mm.; breadth, 5·5–6·5 mm.

ASSAM: Khasi Hills.

Type in the Berlin Entomological Museum.

Genus POPILLIA.

Popillia, Serv., Encycl. Méth. x, 1825, p. 367; Burm., Handb. Ent. iv, 1, 1844, p. 292; Lacord. Gen. Col. iii, 1856, p. 334.

TYPE, *Popillia bipunctata*, F. (S. Africa).

Range. Tropical Asia and Africa.

Generally small in size and short and stout in shape. The head is not large, and the clypeus is broadly rounded, except in *P. nasuta*. The prothorax is narrow in front and dilated to the

base, but much narrower there than the elytra at the shoulders, and the base is produced and excised in the middle in front of the scutellum. The elytra are rather short, exposing the pygidium and part of the propygidium, and bear a narrow membranous margin externally. The pygidium almost always bears a conspicuous patch of dense white hairs on each side of the base, the two patches sometimes uniting to form a transverse band. The prosternum is not elevated behind, but the mesosternum forms a process of varying length between the middle coxæ. The legs are rather stout, the front tibia armed with two teeth externally, and the tarsi closely articulated and not long. The antennæ are short and consist of nine joints. The mandibles are short, rounded externally and blunt or slightly bifid at the tip. The maxilla is armed with five or six very strong sharp teeth. The mentum is long and slightly bilobed in front. All the palpi are short and stout.

The legs of the male are generally thicker than those of the female, but in the *P. cupricollis* group the hind legs, and especially the tarsi, are shorter and thicker in the female. The longer claw of the front and middle feet is cleft in the female, but that of the middle foot is entire in the male of most of the species, but cleft in *P. nitida*, *P. schizonycha*, and a few others. The inner front claw is more or less dilated in the male. In a few species the clypeus is straighter at the front edge in that sex.

In distinguishing the species of this large and difficult genus the number and character of the elytral striæ and their intervals is important. For this purpose the dorsal lines and spaces only are counted, that is those lying between the suture and the shoulder prominences (calli), the space adjoining the suture being called the first interval. The second (or subsutural) interval is sometimes similar to the rest and sometimes wide and completely or incompletely divided by a line of punctures along the middle.

Key to the Species.

1	(4)	Pygidium without hairs.	
2	(3)	Clypeus pointed, triangular	*nasuta*, Newm., p. 62.
3	(2)	Clypeus transverse, semicircular .	*cyanea*, Hope, p. 62.
4	(1)	Pygidium decorated with pale hairs, generally in two patches.	
5	(52)	Pronotum without hair above.	
6	(49)	Elytra without distinct dorsal foveæ.	
7	(18)	Elytra with five equidistant dorsal striæ.	
8	(17)	Ventral segments with double rows of hairs.	
9	(10)	Colour uniformly golden-red	*felix*, Arrow, p. 63.
10	(9)	Colour not uniform.	
11	(16)	Mesosternum produced.	
12	(15)	Striæ of elytra deep.	
13	(14)	Large; elytral intervals less convex	*marginicollis*, Hope, p. 64.

14	(13)	Smaller; elytral intervals more convex	*birmanica*, Arrow, p. 65.
15	(12)	Striæ of elytra not deep	*lævistriata*, Arrow, p. 66.
16	(11)	Mesosternum not produced......	*andamanica*, Kr., p. 66.
17	(8)	Ventral segments with single rows of hair	*pulchra*, Arrow, p. 67.
18	(7)	Dorsal striæ not equidistant, or more than five.	
19	(44)	Elytra without abrupt lateral flange.	
20	(31)	The four inner elytral striæ entire, similar and equidistant.	
21	(24)	Pronotum strongly punctured, at the sides at least.	
22	(23)	Pygidium with two basal tufts ..	*difficilis*, Newm., p. 68.
23	(22)	Pygidium with a basal band of hairs	*puncticollis*, Kr., p. 69.
24	(21)	Pronotum very smooth.	
25	(28)	Sternal process broad; 5th elytral interval not broad.	
26	(27)	Sternal process pointed	*testaceipennis*, Kr., p. 69.
27	(26)	Sternal process blunt	*nitida*, Hope, p. 70.
28	(25)	Sternal process narrow; 5th elytral interval broad and irregularly punctured.	
29	(30)	Front margin of the clypeus narrowly reflexed	*lævicollis*, Kr., p. 71.
30	(29)	Front margin of the clypeus broadly reflexed	*clypealis*, Ohaus, p. 71.
31	(20)	Second elytral stria more or less disrupted.	
32	(39)	Mesosternum produced.	
33	(34)	Mesosternal process acute; elytra bicolorous	*flavofasciata*, Kr., p. 72.
34	(33)	Mesosternal process blunt; elytra unicolorous.	
35	(36)	Legs pale	*putkaina*, sp. n., p. 73.
36	(35)	Legs dark.	
37	(38)	Sides of the pronotum strongly punctured	*cupricollis*, Hope, p. 73.
38	(37)	Sides of the pronotum very lightly punctured	*macclellandi*, Hope, p. 74.
39	(32)	Mesosternum vertical in front.	
40	(43)	Pronotum elongate, finely punctured (except at the sides).	
41	(42)	Second elytral stria entirely disrupted.................... ..	*nottrotti*, Kr., p. 75.
42	(41)	Second elytral stria almost entire.	*patricia*, sp. n., p. 75.
43	(40)	Pronotum strongly transverse, very coarsely punctured	*subquadrata*, Kr., p. 76.
44	(19)	Elytra with abrupt lateral flange.	
45	(48)	Mesosternal process rather long.	
46	(47)	Pronotum very finely punctured.	*gemma*, Newm., p. 77.
47	(46)	Pronotum very strongly punctured	*amabilis*, Arrow, p. 77.
48	(45)	Mesosternum short	*impressipyga*, Ohaus, p. 78.
49	(6)	Each elytron with a fovea before the middle.	

50 (51) Pygidium very prominent and convex; hair-tufts small and loose . *caerulea*, Boh., p. 79
51 (50) Pygidium not very prominent or convex; hair-tufts large and close. *feæ*, Kr., p. 80.
52 (5) Pronotum more or less hairy.
53 (74) Hair confined to the sides of the pronotum.
54 (63) Tufts of the pygidium not large and rounded.
55 (60) Elytra deeply striated.
56 (59) Striæ regular and distinctly punctured.
57 (58) Legs bright yellow .... *pulchripes*, Arrow, p 80.
58 (57) Legs dark .... *lucida*, Newm., p. 81.
59 (56) Striæ irregular and not distinctly punctured .... *chlorion*, Newm., p. 82.
60 (55) Elytra very lightly punctate-striate.
61 (62) Longer middle claw of ♂ entire *. *lævis*, Burm., p. 83.
62 (61) Longer middle claw cleft in both sexes .... *clara*, Arrow, p. 83.
63 (54) Tufts of pygidium large and rounded.
64 (65) Pronotum closely punctured .... *adamas*, Newm., p. 84.
65 (64) Pronotum not closely punctured.
66 (67) Intervals of elytra nearly equal, convex .... *eximia*, Arrow, p 84.
67 (66) Intervals of elytra unequal, the 2nd wide, punctured.
68 (71) Pygidium feebly sculptured; longer middle claw of the male not cleft.
69 (70) Sternal process blunt .... *discalis*, Walk., p. 85.
70 (69) Sternal process sharp .... *propinqua*, Arrow, p. 87
71 (68) Pygidium strongly sculptured; longer middle claw of the male cleft.
72 (73) Sternal process sharp; elytra feebly foveolated .... *complanata*, Newm., p. 87.
73 (72) Sternal process blunt; elytra strongly foveolated .... *schizonycha*, Arrow, p. 88.
74 (53) Hair not confined to the sides of the pronotum.
75 (82) Pronotum with erect scattered hairs.
76 (77) Pygidium without basal hair-patches .... *sulcata*, Redt., p. 89.
77 (76) Pygidium with basal hair-patches.
78 (81) Pronotum strongly punctured.
79 (80) Front margin of the clypeus strongly reflexed .... *simlana*, Arrow, p. 89.
80 (79) Front margin of the clypeus not strongly reflexed .... *pilosa*, Arrow, p. 90.
81 (78) Pronotum rugose .... *minuta*, Hope, p. 91.
82 (75) Pronotum covered with close even hair .... *pilicollis*, Kr., p. 91.

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* The female is unknown.

28. **Popillia nasuta.**

Popillia nasuta, Newm.,* Mag. Nat. Hist. (2) ii, 1838, p. 337; id., Trans. Ent. Soc. Lond. iii, 1841, p. 46; Burm., Handb. Ent. iv, 1, 1844, p. 295.
Popillia acuta, Newm.,* l. c.

Golden-red, coppery or green, sometimes with the elytra less deeply suffused with metallic green lustre.

It is oval, stout, and convex in shape, with coarse yellowish hairs at the sides beneath, but none upon the upper surface. The head is finely rugose; the clypeus is triangular, with the sides nearly straight and regularly approximating towards the extremity, which is bluntly pointed and strongly reflexed. The pronotum is strongly convex and very smooth, with a few fine punctures near the front angles; the sides are strongly rounded, the front angles slightly acute, the hind angles very obtuse, and the base not deeply emarginate. The scutellum bears a few punctures, and the elytra bear five deep, nearly equidistant, strongly punctured dorsal striæ. The intervals are smooth and convex, the second having a short imperfect stria at the base. There is no lateral flange. The pygidium is coarsely transversely rugose and without tufts or hairy clothing. The mesosternal process is rather long, acute, and not compressed. The front tibiæ are armed with two strong sharp teeth.

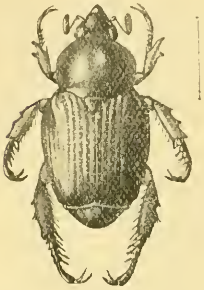

Fig. 18.—*Popillia nasuta.*

♂. The inner front claw is deeply cleft, the inner lobe is broad, and both lobes are truncated at the end. The outer middle claw is long and entire.

♀. The longer claw of the front and middle feet is deeply cleft, with the lobes nearly equal and very sharp.

Length, 10–11 mm.; breadth, 5·5 mm.

Bombay.

Types in the Oxford Museum; co-types in the British Museum.

There is a little variation in the degree of acuteness of the clypeus, which led to the first-discovered specimens being regarded as belonging to two species.

29. **Popillia cyanea.**

Popillia cyanea, Hope,* Gray's Zool. Miscell. 1831, p. 23; Newm., Trans. Ent. Soc. Lond. iii, 1841, p. 39; Burm., Handb. Ent. iv, 1, 1844, p. 297.
Popillia beryllina, Hope,* l. c.

Deep steel-blue, indigo-blue, or nearly black, above and beneath, with the sides of the sternum and abdomen not very thickly clothed with coarse greyish hair, and the pygidium quite naked.

The body is short, robust and convex, very smooth and shining. The clypeus and forehead are finely and closely rugose, the former semicircular in shape, with the margin only slightly reflexed, and the vertex of the head closely punctured. The pronotum is very convex, very smooth and shining in the middle and at the base, closely punctured at the front and sides, with the lateral margins strongly curved, the front angles acute, and the hind angles almost obsolete. The scutellum is minutely and sparingly punctured. Each elytron bears a deep transverse impression before the middle and six lightly impressed dorsal rows of fine punctures, the second row being incomplete posteriorly. The pygidium is coarsely, and at the sides confluently, punctured. The mesosternal process is well produced, broad (vertically), and bluntly rounded at the end.

♂. The pygidium is convex and protuberant at the apex, and the front tibia is rather broad, with sharp but feeble teeth.

♀. The pygidium is rather flat, and the terminal tooth of the front tibia is long and blunt.

Length, 11–13 mm.; breadth, 6–7 mm.

PUNJAB: Kangra Valley, 4500 ft. (*G. C. Dudgeon*, July); W. KASHMIR (*Lt.-Col. Seathun*); N. BENGAL: Siliguri; UNITED PROVINCES: Garhwal, Mussoorie, 7500 ft. (*H. M. Lefroy*), Kumaon, W. Almora (*H. G. Champion*); NEPAL (*Hardwicke*—types); SIKKIM: Darjiling (*H. Fruhstorfer*), Lebong, 5000 ft. (*H. M. Lefroy*); ASSAM: Naga and Patkai Hills (*W. Doherty*).

Types in the British Museum.

Although it is placed as a synonym of *P. cyanea* in the Munich Catalogue, the few words in which *Popillia concolor*, Cast., is "described" do not seem to me to be applicable to this insect. It may not be an Indian species.

30. Popillia felix. (Plate IV. fig. 15.)

Popillia felix, Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 41.

Golden red above and beneath, with the elytra orange-red, the pygidium bearing two basal patches of whitish hairs, the sternum densely clothed (except in the middle) with similar hairs, and each ventral segment bearing two rows of transversely placed hairs at the sides.

The body is oval, compact and convex, and the upper surface very smooth and shining. The clypeus is shortly transverse, nearly straight in front and very finely rugose, and the forehead is rather closely and evenly punctured. The pronotum is very smooth and shining and scarcely visibly punctured, with the front angles acute, the hind angles very obtuse, and the sides angulate in the middle and not visibly curved. The scutellum is very minutely punctured, and each elytron bears five deep equidistant dorsal striæ, which are finely punctured, the intervals being

smooth and convex. The pygidium is convex and rather coarsely transversely strigose. The mesosternal process is moderately long and slender, not flattened. The tibiæ are stout, and the two teeth of the front tibia short and close together.

♂. The front tibiæ are very broad, and the two teeth minute and sharp.

♀. The terminal tooth of the front tibia is blunt and spatulate and the hind tarsi are very short and thick.

Length, 13–14 mm.; breadth, 8 mm.

ASSAM.

The type in the British Museum and a specimen in the Oxford Museum (from the Miers Coll.) are labelled "India" alone, while one in the Berlin Entomological Museum is said to have come from Assam.

31. Popillia marginicollis. (Plate IV, fig. 14.)

Popillia marginicollis, Hope,* Gray's Zool. Miscell. 1831, p. 23; Newm., Trans. Ent. Soc. Lond. iii, 1841, p. 44; Burm., Handb. Ent. iv, 1, 1844, p. 300; Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 39.

Popillia marginicollis, var. *purpuricollis*, Kraatz, Deutsche Ent. Zeits. xxxvi, 1892, p. 226; Ohaus, Stett. Ent. Zeit. 1897, p. 346.

Popillia marginicollis, var. *atrata*, Kraatz, l. c.

Deep metallic green or golden green, with the clypeus, the sides of the pronotum, the elytra, the extremity of the abdomen (generally) and the legs and antennæ reddish orange with a metallic lustre (generally very slight or absent upon the elytra, except along the suture); the hind tibiæ and the tarsi generally darker in colour than the remainder of the legs.

The body is moderately short, broad, and not very convex above. The clypeus is broad, finely rugose and nearly straight in front, and the forehead is strongly and closely punctured. The pronotum is shining, very minutely punctured, except near the front angles, with the lateral margins strongly angulated before the middle and nearly straight to the front and hind angles, of which the former are acute and the latter well marked but obtuse. The scutellum bears a few punctures. Each elytron bears five deeply impressed, regular and equidistant striæ, finely punctured at the bottom. The intervals are smooth, slightly convex and quite unpunctured. The sides bear less regular rows of strong punctures and are without abrupt flanges. The pygidium is coarsely transversely striolated, and at the apex very convex. There are two small roundish patches of white hairs at the base of the pygidium and scattered hairs at the sides, and the sides of the sternum and of the abdominal segments are rather densely clothed with similar hairs, those of the latter in double series. The mesosternal process is moderately long, but not very sharp and not compressed. The two teeth of the front tibia are minute and placed close together at the extremity.

♂. The legs are stout and the tarsi very short and thick. The front tibia is very broad, with very short but sharp teeth, and the middle tibia is short and rather inflated The inner front claw is broad, blunt and minutely cleft at the extremity, the outer middle claw is long but not cleft.

♀. The front and middle legs are slender, and the hind ones stout, with short thick tarsi.

Length, 11–13 mm.; breadth, 6–7 mm.

NEPAL (*Maj.-Gen. Hardwicke*—type): Khatmandu, Chandragiri; ASSAM: Mangaldai Ghat (*S. Kemp*, Oct.), Sylhet, Cachar

Type in the British Museum.

Several of the supposed varieties of *Popillia marginicollis* belong to different species, but a melanic form (var. *atrata*, Kr.) occurs in which the prothorax is of a deep purple colour and the elytra entirely black or with a narrow pale basal margin. The name *P. purpuricollis* has also been applied by Kraatz to specimens with a purple thorax, but these cannot be recognised as representing a definite variety.

32. **Popillia birmanica.** (Plate IV, fig. 16.)

Popillia birmanica, Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 45.
Popillia marginicollis, var. *brunnicollis*, Kraatz,* Deutsche Ent. Zeits. 1897, p. 327.

Reddish testaceous, with the head (except the clypeus), the middle of the pronotum, the scutellum and parts of the lower surface dark green, entirely suffused with a metallic green lustre except upon the elytra, which have usually more or less distinct longitudinal dark lines.

It is elongate in shape and not very convex. The clypeus is very minutely rugulose, and the rest of the head distinctly punctured. The pronotum is very finely and sparingly punctured, with the middle of the basal part quite smooth. The scutellum bears a few very minute punctures and its apex is rounded. The elytra have each five very deep equidistant dorsal striæ bearing confluent punctures at the bottom, and the intervals are smooth and very convex. The pygidium is coarsely transversely striolated and bears two large white hairy patches at the base and a line of irregular hairs on each side almost meeting at the apex. The ventral segments are divided by transverse carinæ at the sides and doubly fringed. The mesosternum is moderately produced.

Length, 9–12·5 mm.; breadth, 5–7 mm.

ASSAM: Sylhet, Patkai Hills, Cachar; BURMA: Momeit (*W. Doherty*), Papun, Tenasserim (*Lt.-Col. Adamson*).

Type in the British Museum.

The specimen in the Genoa Museum to which the varietal name *brunnicollis* was given by Kraatz is an immature individual. I have stated in Ann. Mag. Nat. Hist. (8) xii, 1913, p. 38, the reasons why this varietal name cannot be employed for the species.

There is the closest relationship between this and the preceding species (*P. marginicollis*), although the genitalia of the males are very different. *P. birmanica* is a rather smaller form, with deeply striated elytra and very convex intervals.

33. Popillia lævistriata.

Popillia lævistriata, Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 42.

Reddish testaceous, suffused (except upon the elytra) with a metallic green lustre, the head (except the clypeus), the pronotum and scutellum dark green, the former with rather broad but vaguely defined yellow margins.

It is rather elongate and extremely smooth and shining. The clypeus is very minutely rugulose and the forehead rather closely punctured. The pronotum is very minutely punctured at the front and sides, the lateral margins are sharply angulated in the middle, the front angles very acute, the hind angles slightly obtuse but not rounded, and the base strongly excised before the scutellum, which bears only a few minute punctures. Each elytron bears five equidistant punctured striæ, which are lightly impressed, with the intervals scarcely convex. The pygidium is coarsely transversely rugose and bears two rather large compact patches of whitish hairs at the base. The ventral segments are divided laterally by median carinæ and each bears a double fringe of stiff hairs. The mesosternum is produced into a moderately long and acute process.

♂. The legs are very short and thick, and the front tibia bears two very minute sharp teeth placed close together at the extremity.

Length, 11 mm.; breadth, 6 mm.

ASSAM: Patkai Hills (*Doherty*).

I know only the single type-specimen in the British Museum.

34. Popillia andamanica. (Plate IV, fig. 17.)

Popillia andamanica, Kraatz,* Deutsche Ent. Zeits. 1892, p. 279; Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 39.

Popillia marginicollis, var. *andamanica*, Ohaus, Stett. Ent. Zeit. lviii, 1897, p. 346.

Popillia marginicollis, var. *trifolium*, Ohaus, loc. cit.

Orange, with the head (except the clypeus), the pronotum (except the lateral borders), and the scutellum dark golden green or metallic greenish blue, and the elytra decorated with black as follows:—The posterior half is black, sharply limited anteriorly and extending forward at the suture and still more along the outer margins, where it frequently unites with a black shoulder-spot, and there is a black spot in the middle of the remaining pale area upon the anterior half of each elytron. The upper and lower surface, except the elytra, as well as the legs, are suffused with a pale greenish metallic lustre.

Pale specimens occur in which the dark markings are almost or entirely absent.

The shape is rhomboidal and rather depressed above. The head is small, with the clypeus finely rugose and not strongly transverse. The forehead is closely punctured. The pronotum is rather long, shining, with excessively fine punctures upon its anterior part, becoming rather stronger near the front angles; the sides are obtusely angulated before the middle, the front angles acute and the hind angles obtuse. The scutellum bears rather numerous punctures, and each elytron bears five deep, nearly equal and equidistant dorsal striæ, which are finely punctured at the bottom. The pygidium is strongly transversely punctured and striolated and has two tufts of whitish hairs at the base, and the lower surface of the body is rather thickly clothed at the sides with similar hairs. The mesosternal process is scarcely produced.

♂. The legs are very stout, the front tibia very broad, with two minute but sharp teeth and very short and thick front tarsi. The pygidium is conical at the extremity.

♀. The four anterior legs are slender and the hind legs stout, with very short and thick tarsi. The two teeth of the front tibia are long, the terminal one blunt and the upper one very sharp. The pygidium is rather flat.

Length, 8–9·5 mm.; breadth, 5–5·5 mm.

ANDAMAN ISLANDS (*Roepstorff*); NICOBAR ISLANDS (*Roepstorff*).

Type in the Brussels Museum. The British Museum possesses a long series collected, together with the type, by Roepstorff.

This was stated by Dr. Ohaus to be a variety of *Popillia marginicollis*, Hope, but it is in reality a very well-marked species, differing from the latter in its small size, differently shaped mesosternal process, clypeus, prothorax, etc., as well as in its very peculiar coloration. The specimen called by Ohaus *P. marginicollis* var. *trifolium* appears to be a normal well-coloured example.

35. Popillia pulchra.

Popillia pulchra, Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 40.
Popillia gemma, Kraatz (nec Newm.), Deutsche Ent. Zeits. 1892, p. 268.

Brilliant golden yellow, with crimson and greenish reflections; the head (except the clypeus), pygidium (except the posterior half), and lower surface dark metallic green, and the legs golden, with the hind tarsi black.

The body is rather short, rhomboidal in shape and not very convex. The clypeus is short, nearly straight in front and closely punctured, and the forehead is strongly and not very closely punctured. The pronotum is distinctly but not closely punctured at the sides, very lightly in the middle, and the angles are well-

marked, the front ones acute, the hind slightly obtuse, the sides scarcely rounded, but angulated before the middle. The scutellum bears a few minute punctures. The elytra have each five deep punctured dorsal striæ; the intervals are convex, but the second and fourth are a little depressed and the former bears a few large punctures anteriorly. The pygidium is rather coarsely transversely strigose, and bears two patches of pale hairs at the base. The sternum is clothed with rather long decumbent hairs, and each ventral segment has a row of similar hairs at the side. The mesosternal process is compressed, rounded at the extremity and moderately long. All the tibiæ and the hind tarsi are short and thick in both sexes.

♂. The front tibiæ are very broad and the two teeth short.

Length, 9·5–11 mm.; breadth, 6–6·5 mm.

BURMA: Karen Hills, 2700–3300 ft. (*L. Fea*, Dec.).

Type in the British Museum.

36. **Popillia difficilis.**

Popillia difficilis, Newm.,* Mag. Nat. Hist. (2) ii, 1838, p. 337; id., Trans. Ent. Soc. Lond. iii, 1841, p. 45.

Golden green, with the elytra and the front and middle tibiæ and tarsi testaceous yellow, and the whole surface suffused with metallic green lustre.

It is a small species of rather elongate oval shape. The head and middle part of the clypeus are finely punctured, and the front and sides of the latter a little excavated and rugose. The pronotum is finely and closely punctured, except in the posterior median part; it is strongly narrowed to the front, with its sides sharply angulated in the middle, the front angles acute, the hind angles sharp and rectangular, the base deeply emarginate and having a distinct marginal stria on each side. The scutellum bears a few extremely fine punctures. The elytra bear seven deep and nearly equidistant, strongly-punctured dorsal striæ, and the intervals are smooth and convex; the sides are not flanged. The pygidium is strongly but not closely punctured, with the sides hairy, and two large, not very well-defined hairy patches at the base. The mesosternal process is long, compressed and narrow, but not acute. The metasternum is rather thickly clothed with coarse yellowish hair, and the abdominal segments bear continuous bands of similar hairs. The front tibia bears two sharp teeth.

Length, 8·5 mm.; breadth, 4·5 mm.

"EAST INDIES."

Type in the Oxford Museum.

I have seen only the single type-specimen. It is not certain that the species inhabits India proper.

37. **Popillia puncticollis.**

Popillia puncticollis, Kraatz,* Deutsche Ent. Zeits. 1897, p. 329.

Green or golden green, with the elytra testaceous, suffused with a metallic lustre.

The body is rather long and narrow. The clypeus is finely granular and the forehead densely punctured. The pronotum is closely and rather coarsely punctured, but less strongly along the middle line, with a nearly smooth space before the scutellum; the sides are gently angulated before the middle, the front angles acute and the hind angles very obtuse. The scutellum bears a few punctures, and each elytron has six deeply impressed, strongly punctured dorsal striæ placed at nearly equal distances, the intervals being smooth and convex; the sides are dilated, but not abruptly flattened behind the shoulders. The pygidium is coarsely and rugosely punctured, and entirely but not thickly clothed with rather long coarse whitish hair, with a rather narrow transverse basal band of dense hairs, which is interrupted at the middle. The sides of the metasternum and of the abdominal segments are rather thickly clothed with similar hairs and the mesosternal process is rather long and strongly compressed. The front tibia is armed with two strong sharp teeth.

I have not seen a male.

Length, 11 mm.; breadth, 5·5 mm.

Sikkim (*Bretandeau*).

Type in M. René Oberthür's collection; co-types in the Genoa and Berlin Entomological Museums.

38. **Popillia testaceipennis.**

Popillia testaceipennis, Kraatz, Deutsche Ent. Zeits. 1892, p. 270.

Steel-blue or green above and below, with the elytra testaceous, their inner, front and hind edges very narrowly and the outer edges less narrowly bordered with the dark colour of the rest of the body.

The body is rhomboidal, slightly elongate, depressed, and very smooth and shining. The head is rather finely and rugosely punctured, with the sides of the clypeus strongly contracted to the front margin, which is very gently curved. The pronotum is almost smooth, with very minute punctures towards (but not reaching) the sides and in the front angles; the lateral margins are angulated before the middle, the front angles acute and the hind angles obtuse. The scutellum is scantily and minutely punctured, and the elytra bear six similar and nearly equidistant strongly-punctured striæ, with the intervals smooth and scarcely convex; the lateral margins are not flanged. The pygidium is strongly punctured, and bears rather scanty yellowish hairs at the sides and apex and two sharply-defined rather remote basal patches. The mesosternal process is strongly compressed, broad, curved and acuminate. The middle of the metasternum and abdomen are smooth and the sides rather thickly hairy, the hairs

forming transverse lateral bands upon the abdominal segments and also bordering the femora.

In one specimen of the Genoa Museum series the dark border of the elytra has enlarged to such a degree that only a large roundish pale spot remains upon each.

♂. The front tibia is broad and bears two very short minute teeth close together at the extremity.

♀. The terminal tooth of the front tibia is long and blunt.

Length, 10 mm.; breadth, 6 mm.

Burma: Karen Hills, 900–1100 metres (*L. Fea*, Dec.).

Type in the Genoa Museum.

9. **Popillia nitida.**

Popillia nitida, Hope,* Gray's Zool. Miscell. 1831, p. 23; Newm., Trans. Ent. Soc. Lond. iii, 1841, p. 45.
Var. *Popillia concolor*, Kraatz,* Deutsche Ent. Zeits. 1897, p. 328.

Deep metallic green or golden green, with the legs and elytra orange, suffused with a metallic green lustre.

It is very smooth and shining, oval in form, with the shoulders scarcely prominent, and rather depressed. The clypeus is finely rugose, short and broad, with the margin rounded; the forehead is finely and not densely punctured. The pronotum is extremely smooth and shining, very feebly convex, and scarcely perceptibly punctured, except towards the lateral margins; these are gently angulated near the middle and nearly straight from there to the angles, of which the front ones are acute and the hind rather obtuse. The scutellum is smooth and almost devoid of punctures. and the elytra each bear seven deeply impressed, regular and almost equidistant, punctured dorsal striæ, with the intervals narrow and convex; the sides are gently rounded and not flanged. The pygidium is rather flat, smooth and shining along the middle, coarsely punctured and clothed with moderately long greyish hairs at the sides, the hairs collected at the base into two masses, not very well defined and sometimes indistinguishable. The mesosternal process is long and curved, but blunt at the end. The sides of the sternum and the abdominal segments are clothed with coarse yellowish hairs. The legs are slender, and the longer claw of the four anterior feet is cleft in both sexes.

In the var. *concolor*, Kr., the elytra, like the rest of the body, are deep metallic green. This phase was taken with the typical form in Sikkim.

♂. The front tibia is broad and the teeth very short and sharp.

♀. The apical tooth of the front tibia is long and blunt.

Length, 10–11·5 mm.; breadth, 5–5·5 mm.

Nepal (*Maj.-Gen. Hardwicke*—type); Sikkim: Darjiling (*Pearson*), Kurseong, 6000 ft. (*E. A. D'Abreu*, July); Assam: Khasi Hills (*Griffiths*), Manipur (*W. Doherty*).

Type in the British Museum; that of var. *concolor* in M. René Oberthür's collection.

40. **Popillia lævicollis.**

Popillia lævicollis, Kraatz,* Deutsche Ent. Zeits. 1892, p. 275.

Deep metallic green, golden green, or fiery red, with the lower surface usually dark green and the elytra orange-red.

The form is rather ovate and depressed, the pygidium bears a not very thick patch of grey hairs on each side of the base, and the sides of the sternum and abdomen are thinly clothed with rather long grey hairs. The clypeus is densely punctured, with the front margin broadly rounded and narrowly reflexed; the forehead is densely punctured and the vertex nearly smooth. The pronotum is rather broad at the base, not very convex and almost smooth, but with fine scattered punctures towards the sides; the lateral margins gradually approximate from base to apex and are only very feebly angulated at the middle, the front angles being acute and the hind angles distinct but obtuse. The scutellum is very smooth, and the elytra bear six deeply-impressed dorsal striæ, the fifth interval very broad, with a median line of punctures, sometimes very incomplete; there are no lateral flanges. The pygidium is rather flat and irregularly punctured; the metasternum and abdomen are smooth in the middle. The mesosternal process is long, narrow, and blunt at the end.

♂. The front tibia bears two sharp but very short teeth.

♀. The terminal tooth of the front tibia is rather long and blunt.

Length, 9–10 mm.; breadth, 5–5·5 mm.

ASSAM: Khasi Hills, Shillong; BHUTAN (*Capt. Pemberton*); SIKKIM: Darjiling (*E. T. Atkinson*); TONKIN (*R. Vitalis de Salvaza*).

Type in the Berlin Entomological Museum.

41. **Popillia clypealis.**

Popillia clypealis, Ohaus,* Stett. Ent. Zeit. 1897, p. 347.

Deep metallic green, golden green, or fiery red, with the lower surface usually deep green and the elytra orange-red.

It is ovate and rather depressed in shape. The pygidium and lower surface are clothed, not very thickly, with long grey hairs, which form a not very conspicuous transverse band at the base of the pygidium. The head is closely punctured, the clypeus less closely and deeply than the forehead, the clypeal margin broadly rounded, and strongly and abruptly reflexed. The pronotum is very smooth and shining, with a few shallow scattered punctures towards the front and sides; the lateral margins contracted from the base to the front angles, scarcely curved, very obtusely angulated before the middle, with the front and hind angles sharp, the former acute and the latter obtuse. The scutellum is smooth, very short, and bears only a few punctures. The elytra bear six deeply-impressed, finely-punctured dorsal striæ, the intervals convex and rather narrow, the fifth broader, with scattered punctures along the middle; there are no lateral flanges. The

pygidium is coarsely and confluently punctured, as are the metasternum and abdomen at the sides. The mesosternal process is moderately produced and sharp.

♂. The front tibia bears two short and rather sharp teeth.

♀. The front tibia bears two longer and blunter teeth.

This species closely resembles *Popillia lævicollis*, Kr., to which it is most nearly related, but with well-marked points of difference. Besides the broadly turned-up edge of the clypeus, from which it takes its name, it has a smaller and shorter scutellum, and the pygidium has a basal band of not very dense hairs, instead of two hair-patches.

Length, 9 mm.; breadth, 6 mm.

ASSAM: Khasi Hills; PUNJAB: Simla; KASHMIR.

Type in Dr. F. Ohaus' collection.

42. Popillia flavofasciata.

Popillia flavofasciata, Kraatz, Deutsche Ent. Zeits. xxxvi, 1892, p. 271.

Brilliant deep purplish crimson, with the elytra testaceous, except the apical third, the shoulders and the lateral margins, which are black, and entirely metallic, with the exception of the elytra, of which only the sutural edges are metallic.

It is elongate in shape, rather depressed, and extremely smooth and brilliant, with the sides of the body beneath densely clothed with rather long decumbent yellow hair. The clypeus is densely rugose, with the front margin straight and the sides rounded; the forehead is rather rugosely, and the vertex irregularly, punctured. The pronotum bears only extremely minute and scanty punctures, except near the front angles, where they are stronger, and the scutellum has only a few minute punctures. The elytra are rather smooth, but bear a sutural stria and five nearly equal and equidistant dorsal striæ, with a wide and irregularly-punctured subsutural interval; the striæ are finely punctured and the intervals nearly flat. The pygidium is coarsely but scantily punctured, and has a broadly transverse basal patch of yellow hairs on each side. The mesosternal process is strongly produced and compressed, with its apex curved upwards and rather sharp. The legs are stout, the front tibia armed with two acute teeth.

Fig. 19.
Popillia flavofasciata.

♂. The terminal tooth of the front tibia is short and straight, and the longer middle claw is hardly perceptibly cleft.

♀. The terminal tooth of the front tibia is long and curved, and the longer claws of the front and middle feet distinctly cleft.

Length, 10–12 mm.; breadth, 5–7 mm.

Burma: Ruby Mines, 3600–7500 ft. (*W. Doherty*); Tonkin (*R. Vitalis de Salvaza*, May).
Type in M. René Oberthür's collection.

43. **Popillia patkaina**, sp. nov.

Testaceous, entirely suffused with a golden-green lustre, and with the forehead, an elongate median patch upon the pronotum, the pygidium, lower surface, the lower part of the hind tibia and the tarsi dark green or coppery.

It is short and broad, with very stout legs, and rather densely clothed with greyish hair beneath. The clypeus is broad and densely rugose, the forehead rugosely and the vertex finely punctured. The pronotum is very finely and sparsely punctured, but a little more strongly near the front angles; the sides are angulated before the middle, scarcely rounded, with the front angles acute and the hind angles nearly right angles. The scutellum bears only a very few minute punctures, and the elytra bear seven closely-set and deeply-punctured dorsal striæ, the second disrupted at the base and the outer ones abbreviated behind. The pygidium is very feebly rugulose and decorated with two broad, nearly contiguous basal patches of white hairs and longer scattered hairs in the apical part. The mesosternal process is short, broadly compressed, and very blunt and rounded in front.

♂. The front tibia is very broad and armed with two very short sharp teeth; the longer front claw is very unequally cleft and the longer middle claw entire.

The ♀ is unknown.

Length, 9 mm.; breadth, 5 mm.

Assam: Patkai Hills (*Doherty*).

Type in the British Museum.

44. **Popillia cupricollis.**

Popillia cupricollis, Hope,* Gray's Zool. Miscell. 1831, p. 23; Newm., Trans. Ent. Soc. Lond. iii, 1841, p. 42.
Popillia formosa, Hope,* l. c.
Popillia smaragdula, Hope,* l. c.
Popillia caschmirensis, Redt.,* Hügel's Kaschmir, iv, 2, 1848, p. 528.
Popillia nitidicollis, Gory, Guérin's Iconographie, 1844, pl. 25, fig. 2.
Popillia hilaris, Burm.,* Handb. Ent. iv, 2, 1855, p. 510.

Brilliant metallic crimson, less frequently golden green, with the lower surface and femora usually deep green and the elytra orange-red with a rosy metallic tinge.

The body is broad, very smooth and shining, with very stout legs. The clypeus and forehead are densely rugose, the former broadly rounded, and the vertex closely and deeply punctured. The pronotum is rather closely punctured, more strongly at the front and sides, with the lateral margins angulated before the middle, the front angles acute and the hind angles distinct but obtuse. The scutellum bears a few fine punctures, and the elytra have each five deeply impressed and punctured dorsal striæ, the

subsutural interval being very broad and bearing an irregular double line of strong punctures, and the fourth interval bearing a single row of separate punctures along the middle; they are not flanged at the sides. The pygidium is strongly and rugosely punctured, except along the middle, and bears a dense patch of yellowish hairs on each side at the base; the femora and the lower surface (except along the middle) are rather thickly clothed with similar coarse hairs. The mesosternal process is blunt and not very long.

♂. The two teeth of the front tibia are short and sharp, and the hind tibia is inflated at the base. The pygidium is rather convex and protuberant. The larger claw on all the feet is very long.

♀. The legs are a little less robust, except the hind tarsi, which are rather shorter and thicker than in the male. The teeth of the front tibia are moderately sharp, but longer than in the male.

Length, 11–13 mm.; breadth, 6–7 mm.

Punjab: Kangra Valley, Simla (Aug.), Kulu, Kasauli (*H. J. Barrow*, July); United Provinces: Mussoorie, 7500 ft. (*H. M. Lefroy*, Aug.), Naini Tal, Kumaon, 6000 ft. (*E. T. Atkinson*); Nepal (*Maj.-Gen. Hardwicke*—types); Sikkim: Kurseong, 5000 ft. (*Annandale*, Sept.), Soom, Darjiling District (Carmichael Coll.); Assam: Pedong (*Desgodins*).

Types of Hope in the British Museum; that of *P. caschmirensis* in the Vienna Museum; that of *P. hilaris*, Burm., in the Halle Museum.

This beautiful species is extremely abundant throughout the Himalayan region from Kashmir to Sikkim. Although varying comparatively little in coloration, it is subject to great variation in size, in its relative proportions of length and breadth, and in the puncturation of the pronotum. The type is a male. The names *formosa* and *smaragdula* were given by Hope to female specimens darkened in colour, perhaps by bad methods of preservation, and the form *caschmirensis* is comparatively small and narrow in shape.

45. Popillia macclellandi.

Popillia macclellandi, Hope,* Trans. Ent. Soc. Lond. iv, 1845, p. 8.

Deep purplish crimson, metallic, with the elytra orange, suffused with a faint rosy metallic lustre, the lower surface and femora sometimes very deep metallic green.

Moderately elongate in shape, with very stout legs; very smooth and shining above and moderately clothed beneath with grey hairs, the pygidium bearing two small basal patches of white hairs.

The form and sculpture generally are exactly as in *P. cupricollis*, Hope, but the punctures at the sides of the pronotum are very minute and inconspicuous, instead of being coarse and strong.

Length, 12–13·5 mm.; breadth, 7–8 mm.

Assam: Cherrapunji, 4400 ft. (*S. W. Kemp*, October), Naga Hills (*W. Doherty*).

Type in the British Museum.

This is very closely related to *Popillia cupricollis*, of which it is the representative farther east. It differs by the less vivid and more purplish colour of the head, prothorax, scutellum and legs, the smaller hair-patches at the base of the pygidium, and especially the much finer puncturation of the sides of the pronotum. The males may also be distinguished by their differently shaped ædeagi.

P. macclellandi was stated by Hope to inhabit Chusan, in Eastern China, but, like *Mimela downsi* and other species described at the same time, was evidently the subject of a mistake.

46. Popillia nottrotti.

Popillia nottrotti, Kraatz,* Deutsche Ent. Zeits. 1892, p. 273.

Golden or coppery green above and beneath, the elytra orange, with a strong metallic suffusion and generally with their sides vaguely darkened.

The body is narrowly elongate and not very convex. The clypeus is densely granular and broadly rounded in front, and the forehead closely punctured. The pronotum is finely punctured all over, sparingly in the middle and very closely at the sides; the lateral margins are angulated at the middle and nearly straight from there to the angles, of which the front ones are very sharp and the hind ones nearly right angles. The scutellum bears a few fine punctures, and the elytra bear a smooth elevated sutural costa and a similar median dorsal one, the intervening space being wide and irregularly punctured; the space between the dorsal costa and the shoulder bears three rows of closely punctured striæ, which are abbreviated behind; the sides of the elytra are without lateral flanges. The pygidium bears two basal patches of dense whitish hairs, the apical part being very shining and almost unpunctured, and the sides of the sternum and abdomen are densely clothed with coarse whitish hair. The mesosternum forms a compressed, broadly rounded, scarcely produced lamina.

♂. The tarsi are very thick, and the front tibia bears two acute teeth. The pygidium is very convex.

♀. The four anterior tarsi are slender, the hind pair thick, the teeth of the front tibia blunt, and the pygidium rather flat.

Length, 10 mm.; breadth, 5 mm.

Bengal: Burgu (*Dr. Nottrott*—type); Sikkim: Gopaldhara, Rungbong Valley, 6300 ft. (*H. Stevens*).

Type in the Berlin Entomological Museum.

47. Popillia patricia, sp. nov. (Plate I, fig. 12.)

Brilliant golden green, with the legs, pygidium and lower surface dark coppery green, and the elytra testaceous with a strong metallic green suffusion and dark greenish-black lateral margins.

It is oval in shape and very brilliant, with two large roundish patches of pale hairs at the base of the pygidium, some erect scattered hairs near the extremity, and the sternum, femora and abdominal segments rather closely clothed. The clypeus is

broadly rounded and finely rugose, the forehead rugosely punctured. The pronotum is finely punctured in the middle, strongly and closely at the sides, the lateral margins are angulated in the middle, nearly straight from there to the angles, of which the front ones are very acute and the hind slightly obtuse. The scutellum bears only a very few minute punctures, and the elytra bear six very deeply impressed and punctured striæ, the second a little interrupted, the fifth a little abbreviated behind, and the fifth interval broad and bearing an incomplete series of deep punctures. The pygidium is irregularly and not deeply punctured. The mesosternum is prominent beneath, but very blunt and not produced. The legs are short and stout.

♂. The teeth of the front tibia are short and very sharp.

♀. The terminal tooth of the front tibia is long, curved and blunt.

Length, 8·5–9·5 mm.; breadth, 4·5–5·5 mm.

ASSAM: Naga Hills (*W. Doherty*, June), Khasi Hills (*Col. Godwin-Austen*).

Type in the British Museum; co-types in Mr. O. E. Janson's collection.

This species is more elongate than *P. subquadrata*, the pronotum is much less transverse and less coarsely punctured, and the pygidial tufts are not transverse.

48. Popillia subquadrata.

Popillia subquadrata, Kraatz,* Deutsche Ent. Zeits. 1892, p. 259.

Coppery green, golden green, or red, with the elytra of the same colour, or chestnut-red, with a metallic green lustre, and with undefined dark margins. The clypeus, legs and extremity of the abdomen are usually of a deep red colour.

The body is short, rhomboidal in shape and flattened above. The clypeus is broad and semicircular, finely rugose, and the forehead densely punctured. The pronotum is very coarsely and closely punctured in front, and very sparingly punctured and shining behind; it is short, broad and convex, with the sides angulate in the middle, the front angles very acute and the hind angles obtuse. The scutellum bears a few punctures, and each elytron has a sutural and five deep dorsal striæ, placed close together and strongly and confluently punctured; the subsutural interval is broad, and coarsely and irregularly punctured; the lateral margins are not flanged. The pygidium is coarsely and rugosely punctured and bears two transverse patches of whitish hairs at the base. The sides of the sternum and abdominal segments are densely clothed with similar coarse hairs. The mesosternum forms a broadly rounded, scarcely produced lamina.

♂. The front tibia is broad, and its two teeth are sharp and minute. The pygidium is convex, and smooth and shining at the apex. The inner front claw is very broad and angulated near the base, and the outer middle claw is entire.

♀. The terminal tooth of the front tibia forms a long blunt lobe, and the pygidium is scarcely convex and rugosely punctured to the apex.

Length, 9–10 mm.; breadth, 5·5–6 mm.

ASSAM: Naga Hills (*W. Doherty*): WESTERN CHINA (type).

Type in the Berlin Entomological Museum.

49. Popillia gemma.

Popillia gemma, Newm., Mag. Nat. Hist. (2) iii, 1839, p. 366; Hope, Trans. Linn. Soc. xiii, 1840, p. 596, pl. 40, fig. 4.

Popillia metallicollis, Fairm.,* Ann. Soc. Ent. Belg. xxxi, 1887, p. 113 (n. syn.).

Deep metallic crimson, with the elytra and femora reddish testaceous, the former having a large pale anterior patch enclosing the scutellum and vaguely defined behind.

It is rather short and rhomboidal in shape and not very convex above. The clypeus is short, broad and rugose, and the forehead is strongly and closely punctured. The pronotum is very shining and minutely punctured, except at the sides, which are moderately coarsely punctured. The lateral margins are angulated before the middle and nearly straight from there to the front and hind angles, of which the front ones are acute and the hind well-marked, but slightly obtuse. The scutellum is minutely punctured, and the elytra have each five deep punctured striæ, the second and fourth intervals being broad and each having an irregular line of punctures along the middle; the external margin is flattened behind the shoulder. The pygidium is decorated with a large transverse patch of decumbent pale hairs at the base on each side, and the apical part is thinly clothed with erect hairs. The mesosternal process is strong, broadly compressed and not sharp. The sides of the sternum and abdomen are clothed with coarse and moderately closely-set pale hairs.

♂. The front tibia is broad, with two short sharp teeth at the end, the inner front claw is broad and deeply cleft and the outer middle one long and entire. The legs are stout and all the tarsi rather short and thick.

♀. The four anterior legs are slender and the terminal tooth of the front tibia long and curved.

Length, 9–11 mm.; breadth, 5·5–6·5 mm.

ASSAM; BHUTAN; S.W. CHINA: Yunnan.

Type not traced; that of *P. metallicollis* in the Paris Museum.

This very greatly resembles *P. cupricollis*, Hope, but seems to be more constant. It is smaller and recognisable by the light-coloured area at the base of the elytra and the flange on each side.

50. Popillia amabilis.

Popillia amabilis, Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 53.

Rich golden green, the elytra, front and middle legs and hind femora pale yellow with a metallic green lustre, the lower

surface, pygidium and hind tibiæ generally reddish golden and the hind tarsi dark brown.

It is elongate in shape, and not very convex above. The pygidium bears two large patches of yellow setæ extending almost across it at the base but scarcely meeting in the middle, the apex bears similar scattered setæ, and the lower surface is rather closely clothed at the sides. The clypeus is very short and rugose, the forehead strongly and densely punctured, and the pronotum coarsely and densely punctured, except before the scutellum, the punctures coalescing near the sides. The scutellum bears only a very few punctures, and the elytra have seven dorsal rows of strongly impressed and punctured lines, the second line rather irregular and disrupted at the base; the sutural space is broad and tapers considerably at each end; there is a narrow but abrupt lateral flange at the external margin. The pygidium is scantily punctured and shining along the middle. The mesosternal process is strong, compressed, broad, and bluntly rounded at the end.

♂. The legs are stout, the front tibia armed with two short sharp teeth near the end, the lower lobe of the inner front claw angulated near the base and the longer claw of the middle foot entire.

I have not seen the female.

Length, 9–10 mm.; breadth, 5–6 mm.

ASSAM: Manipur, Naga Hills (*W. Doherty*), Khasi Hills, Shillong (Indian Mus.); TONKIN (*R. Vitalis de Salvaza*).

Type in the British Museum.

This is very close to *P. difficilis*, Newm., but in that species the pronotum is much less strongly punctured and the lateral flanges to the elytra are absent.

51. Popillia impressipyga.

Popillia impressipyga, Ohaus, Stett. Ent. Zeit. 1897, p. 381.

Deep metallic green or golden green, with the elytra orange, suffused with a faint metallic lustre.

The body is oval and depressed in shape. The clypeus is finely rugose and the forehead densely punctured. The pronotum is very smooth and shining, with extremely fine punctures, which become more evident towards the sides and are strongest and most numerous near the front angles; the lateral margins are obtusely angulate before the middle, nearly straight from there to the angles, of which the front ones are acute and the hind nearly right angles. The scutellum bears a few punctures anteriorly. The elytra bear six nearly similar rows of strongly impressed and punctured dorsal striæ; the subsutural interval is broad and strongly and irregularly punctured in its anterior half, the punctures being gradually reduced to a single series upon the posterior half; there is an abrupt and conspicuous lateral flange

behind the shoulder of each elytron. The pygidium is extremely smooth and shining, very minutely and scantily punctured, except at the sides and apex, where the punctures are rather coarse; there are also scanty grey hairs in the same parts and two patches of decumbent hairs at the base. The sides of the sternum and the posterior half of the sides of the abdominal segments are rather thickly clothed with coarse whitish hairs. The mesosternal process is short, blunt, and compressed.

♂. The two teeth of the front tibia are acute, and the pygidium is very prominent and feebly longitudinally impressed at the apex.

♀. The apical tooth of the front tibia is long and blunt, and the pygidium is deeply excavated at the apex, the cavity being smooth and shining.

Length, 11–12 mm.; breadth, 6–7 mm.

ASSAM: Shillong (*F. W. Champion*), Khasi Hills, Cherrapunji, Nongpriang (*B. Warren*, May); SIKKIM (type).

Type in Dr. F. Ohaus' collection.

52. **Popillia cærulea.**

Popillia cærulea, Boh., Eugen. Resa, 1858, p. 55.

Blue-black or green-black, sometimes with the elytra entirely black. There are scanty erect greyish hairs on the forehead and a very few near the lateral margins of the pronotum, two rather loose and inconspicuous patches at the base of the pygidium, and a thicker clothing upon the legs and the sides of the body beneath.

The body is rather globose, compact and convex. The head is densely rugose and the clypeus broadly rounded. The pronotum is coarsely and closely punctured, except in the posterior median part, where the punctures are fine and scanty. The scutellum is distinctly punctured. Each elytron bears five rather broad and coarsely punctured dorsal striæ, with the subsutural interval rather broad and smooth, except at the base, and there is a deep fovea before the middle. The pygidium is convex and coarsely punctured at the sides. The mesosternal process is broadly compressed, blunt and very little produced. The middle of the metasternum and abdomen are smooth. The front tibia is rather strongly bidentate.

♂. The pygidium is very convex, and the front tarsus short and thick, with a very broad inner claw.

Length, 9–12 mm.; breadth, 5–7·5 mm.

BURMA: Maymyo (*H. L. Andrewes*, May), Ruby Mines (*W. Doherty*); S. CHINA; HAINAN; FORMOSA.

This is a common and widely-distributed Chinese species. I have seen specimens from Formosa determined by Kraatz as *Popillia semiænea*, Kr., but although superficially very like that species, it is different, having a blunter and shorter sternal process and less close and definite hair-patches on the pygidium.

It is not impossible that *Rutela histeroidea*, Gyll. (Schönh., Syn. Ins. i, 3, 1817, App. p. 66) is another name for the present species, but I have seen no specimen with a pale patch upon the elytra.

53. Popillia feæ.

Popillia feæ, Kraatz,* Deutsche Ent. Zeits. 1892, p. 269.

Coppery, golden green, deep green or nearly black, with the elytra yellow or orange, with narrow black margins, sometimes dilated externally and posteriorly, sometimes leaving only an oblique pale patch on each elytron or covering them entirely. In the phase with pale elytra the legs are sometimes also pale-coloured with the exception of the tarsi.

It is rather short and rhomboidal in shape, with very stout legs. The head is finely rugose, with the clypeus short and nearly straight in front. The pronotum is very convex and shining, strongly punctured at the sides and very scantily and feebly in the anterior middle part; the sides are angulated before the middle, the front angles acute and the hind angles obtuse. The scutellum is rather strongly punctured. The elytra bear five deeply impressed and strongly punctured dorsal striæ, the second and fourth intervals being broader than the rest, and the second bearing a nearly complete row of punctures; each elytron has a well-marked depression before the middle. The pygidium is rather coarsely punctured and bears two basal patches of white hairs. The sides of the sternum and abdominal segments are also clothed with coarse whitish hairs, which cover only the posterior half of the latter. The mesosternal process is moderately long, and very broad and blunt.

♂. The front tibia is broad and armed with two short and sharp teeth placed close together.

♀. The terminal tooth of the front tibia is long and blunt.

Length, 9–10 mm.; breadth, 5–6 mm.

NEPAL; SIKKIM: Mungphu (*E. T. Atkinson*), Gopaldhara, Rungbong Valley, 6300 ft. (*H. Stevens*); ASSAM: Sudiya (*W. Doherty*), Sylhet; BURMA: Karen Hills, 2700–3300 ft. (*L. Fea*, Dec.—type), Ruby Mines (*W. Doherty*), Shan States (*Col. Manders*), Mergui (*W. Doherty*); SIAM; MALACCA.

Type in the Genoa Museum.

54. Popillia pulchripes. (Plate IV, fig. 19.)

Popillia pulchripes, Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 48.

Popillia complanata, var. *viridipennis*, Kraatz, Deutsche Ent. Zeits. 1892, p. 263.

Popillia complanata, var. *testaceipes*, Ohaus, Stett. Ent. Zeit. 1897, p. 345.

Uniform metallic green, blue or coppery above and beneath, with the extreme lateral edge of the prothorax and the legs

bright orange, except the hind tarsi and the extremity of the hind tibiæ, which are almost black. The extremity of the abdomen is often orange also.

Rather elongate-oval in shape, very smooth and shining, with a scanty fringe of greyish hairs at the sides of the pronotum, a small but compact tuft on each side of the base of the pygidium, and a thin clothing at the sides of the body beneath. The clypeus is rugosely, and the forehead closely punctured, the pronotum very finely and scantily, except near the sides, and the scutellum is almost smooth. The elytra have each a deep transverse impression behind the scutellum and five strongly impressed and punctured striæ, and the intervals are convex, the second not much wider than the third and bearing only a few punctures. The pygidium is coarsely transversely punctured and the mesosternal process is compressed, strongly curved and not very blunt.

Fig. 20.—*Popillia pulchripes*, male.

♂. The front tibia is armed with two short sharp teeth, the lower lobe of the inner front claw is not angulated and the longer claw of the middle foot is not cleft.

Length, 10–12 mm.; breadth, 6–7 mm.

MADRAS: Nilgiri Hills (*F. H. L. Andrewes* and *Sir G. Hampson*).

Type in the British Museum.

55. **Popillia lucida.** (Plate IV, fig. 18.)

Popillia lucida, Newm.,* Mag. Nat. Hist. (2) ii, 1838, p. 377; id., Trans. Ent. Soc. Lond. iii, 1841, p. 41.

Black, or dark blue, green, or coppery black, with the elytra brick-red, or black, or red with the sutural region vaguely dark, and non-metallic. In the female there is sometimes a small vaguely red patch at each lateral border of the pronotum. The antennæ are also usually red.

The body is shortly oval and moderately convex. It is very shining and clothed beneath with long white hairs, which are not at all closely packed and which also form a narrow border on each side of the pronotum, and a pair of small outstanding spots at the base of the pygidium. The clypeus is rugose, short and transverse, and the forehead is densely punctured. The pronotum is finely punctured, a little more strongly at the sides, and the scutellum bears a few punctures. The elytra have each a not very deep impression behind the scutellum and five deep punctured dorsal striæ, the intervals of which are convex, the subsutural one being little wider than the next and scarcely punctured. The pygidium

is rather coarsely transversely striolated, and the mesosterna process is curved and sharply acuminate.

♂. The body is rather short, the pygidium shining and more scantily punctured than in the female, the teeth of the front tibia are short and sharp, the lower lobe of the inner front claw scarcely angulate at the base and the longer claw of the middle foot entire.

♀. The body is larger and more elongate and convex. The apical tooth of the front tibia is long, curved and blunt.

Length, 8·5–10 mm.; breadth, 4·5–6 mm,

MADRAS: Nilgiri Hills (*Sir G. F. Hampson* and *H. L. Andrewes*).

Type in the Oxford Museum.

56. **Popillia chlorion.**

Popillia chlorion, Newm.,* Mag. Nat. Hist. (2) ii, 1838, p. 337; id., Trans. Ent. Soc. Lond. iii, 1841, p. 39; Burm., Handb. Ent. iv, 1, 1844, p. 298.

Popillia perrotteti, Kraatz,* Deutsche Ent. Zeits. 1892, p. 244 (n. syn.).

Dark metallic green, blue-black, or coppery, occasionally with the lateral parts of the elytra becoming dark blood-red.

The shape is broadly and compactly globose. The lateral grooves of the pronotum bear yellowish hairs or setæ, the pygidium has two basal tufts of outstanding hairs, and the sides of the sternum and abdomen are clothed with similar but rather long outstanding hairs. The clypeus is moderately large, broadly rounded and finely rugose, the forehead more coarsely rugose and the vertex strongly punctured. The pronotum is very convex, smooth and shining, with fine scattered punctures at the sides; the lateral edges are feebly angulated before the middle and nearly straight from there to the front and hind angles, of which the former are acute and the latter well-marked but slightly obtuse; the base is entirely devoid of a marginal stria. The scutellum is finely punctured. The elytra are irregularly corrugated, making the striæ rather indistinct, and each has a large deep transverse impression before the middle. There are five dorsal striæ upon each elytron, and the subsutural interval is very broad and coarsely and irregularly punctured. The pygidium is finely and scantily punctured in the middle, and rugosely at the sides. The mesosternal process is rather long, slender and curved. The legs are moderately slender.

♂. The two teeth of the front tibia are short and sharp, and the front tarsus slightly thickened.

♀. The terminal tooth of the front tibia is long.

Length, 10–12 mm.; breadth, 6–7 mm.

MADRAS: Nilgiri Hills (*H. L. Andrewes*), Utakamand (*C. A. Barber*).

Type in the Oxford Museum; that of *P. perrotteti* in the Berlin Entomological Museum.

P. perrotteti was described as inhabiting Cochin-China, probably by confusion of that province with Cochin in Travancore.

57. Popillia lævis.

Popillia lævis, Burm.,* Handb. Ent. iv, 2, 1855, p. 511.

Entirely deep metallic green above and beneath, and very smooth and shining below.

It is shortly oval in shape ; the clypeus is rather small, rounded and rugose, with the margin strongly reflexed, the forehead rugosely punctured and the vertex thinly but deeply punctured. The pronotum is very smooth, with a few minute punctures, especially near the front and sides, and a thin fringe of white hairs at each side. The scutellum bears a few scattered punctures and its apex is not distinctly angular. The elytra have each a shallow depression before the middle and five rather feebly impressed and punctured dorsal striæ; the first, third and fifth intervals are rather convex, and the second broad and minutely punctured along the middle of the anterior half. The pygidium is coarsely transversely strigose and bears a very minute tuft of white hairs on each side of the base and some similar scattered hairs towards the apex. The mesosternal process is moderately long, blunt and compressed, and the sides of the sternum and abdomen are clothed with long but not very thick hair.

♂. The front tibia is very broad and armed with two very short and sharp teeth, and the inner front claw alone is cleft.

♀ unknown.

Length, 10 mm.; breadth, 6 mm.

S. INDIA : Travancore.

Type in the Geneva University Museum.

The locality "Tibet," given by Burmeister, appears to be wrong, the present group of species (with fringed sides to the pronotum) being almost confined to southern India.

58. Popillia clara.

Popillia clara, Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 49.

Bright metallic green or fiery red above and beneath, or with the upper surface, or the elytra only, fiery red; very smooth and shining.

The body is compactly ovate and moderately convex. The clypeus is rugose, short, with its front edge almost straight, and the forehead is closely punctured. The pronotum is very smooth and shining, with a few fine punctures near the front and sides, and the lateral grooves are deep and contain a very few inconspicuous whitish hairs. The scutellum is almost unpunctured and scarcely angulated at the apex. The elytra have each a distinct transverse impression before the middle and five lightly impressed and punctured dorsal striæ, the 1st, 3rd and 5th intervals being slightly convex, and the 2nd broad and irregularly punctured along the middle. The pygidium is transversely strigose and bears a very minute tuft of outstanding whitish hairs on each side of the base and some scattered hairs towards the apex. The

mesosternal process is moderately long, compressed, blunt and nearly straight. The sides of the sternum and abdomen are clothed with long but not close hair.

♂. The front tibia is very broad and armed with two short but sharp teeth, the lower lobe of the inner front claw is angulated near the base and the outer middle claw is cleft at the tip. The pygidium is smoother, shorter and more inclined than in the female and slightly protuberant at the extremity.

♀. The terminal tooth of the front tibia is long, curved and blunt.

Length, 9–12 mm.; breadth, 5·5–7 mm.

MADRAS: Nilgiri Hills (*H. L. Andrewes*), Pondicherry.

Type in the British Museum.

Mr. Andrewes took this species in considerable numbers. It has the closest resemblance to *P. lævis*, Burm., but the latter has the outer middle claw entire in the male.

59. **Popillia eximia.** (Plate IV, fig. 22.)

Popillia eximia, Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 49.

Bright green above and coppery beneath, with a close but narrow margin of white setæ on each side of the pronotum and a small compact patch on each side of the pygidium.

It is oval and moderately convex in shape and very smooth and shining above. The clypeus is rugose, the forehead densely punctured and the pronotum finely and scantily punctured at the front and sides. The scutellum is almost unpunctured, broad and rounded at the apex. The elytra have each a very large and deep impression behind the scutellum and five deep dorsal striæ, which are distinctly punctured; the subsutural interval is scarcely wider than the next and almost unpunctured. The pygidium is coarsely transversely punctured, and the mesosternal process is moderately long, compressed, curved and pointed.

♂. The two teeth of the front tibia are minute and sharp, the lower lobe of the inner front claw is not angulated nor very wide, and the longer claw of the middle feet is simple.

Length, 11·5 mm.; breadth, 7 mm.

MADRAS: Nilgiri Hills (*Sir G. F. Hampson*).

Type (a single ♂ specimen) in the British Museum.

60. **Popillia adamas.** (Plate IV, fig. 24.)

Popillia adamas, Newm.,* Mag. Nat. Hist. (2) ii, 1838, p. 337; id., Trans. Ent. Soc. Lond. iii, 1841, p. 40; Burm., Handb. Ent. iv, i, 1844, p. 298.

Deep blue-black, shining but not metallic, with a conspicuous fringe of white setæ on each side of the pronotum and a larger round spot of similar setæ on each side of the base of the pygidium. The sides of the body beneath are clothed with rather long but not close whitish hairs.

It is rather elongate-oval in shape. The clypeus is densely

rugose, the forehead closely punctured and the pronotum finely and rather evenly punctured over the greater part of its surface, more strongly at the sides. The scutellum is distinctly punctured, and each elytron has a deep impression behind the scutellum and five strongly impressed and punctured striæ, the subsutural interval being very broad and coarsely punctured in its anterior part. The pygidium is coarsely and deeply transversely strigose. The mesosternal process is moderately long and strongly compressed, curved and slightly acuminate at the end.

♂. The front tibia is armed with two very short and sharp teeth, and the longer claw of the middle feet is entire. The pygidium is rather protuberant at the end.

Length, 10–11 mm.; breadth, 6–7 mm.

BENGAL: Mandar (*P. Cardon*, July); BOMBAY: Bandra (*N. B. Kinnear*, Aug.), Khandala (*Capt. Downes*), Khandesh.

Type in the Oxford University Museum; co-type in the British Museum.

61. **Popillia discalis.** (Plate IV, fig. 21.)

Popillia discalis, Walker,* Ann. Mag. Nat. Hist. (3) iii, 1859, p. 55.
Popillia albilatera, Motch., Bull. Soc. Nat. Mosc. ii, 1863, p. 470.
Popillia nietneri, Redt.,* Reise Novara, Col. 1867, p. 72.
Popillia complanata, Kraatz, Deutsche Ent. Zeits. 1892, p. 263; Ohaus, Ent. Nachr. 1899, p. 220.

Deep metallic green, blue, coppery or black, usually with the clypeus, the lateral margins of the pronotum, the elytra (wholly or partly), the posterior part of the pygidium and the abdomen, the femora and tibiæ, or some of these, orange-yellow.

It is a short and compact insect, smooth and shining, with a conspicuous clothing of whitish hairs near the lateral margins of the pronotum and in the front angles. The pygidium has two large compact basal patches of similar hairs and a few scattered apical ones, and the lower surface is moderately closely covered with hairs except along the middle line. The clypeus is broadly rounded and densely rugose, and the forehead is closely punctured. The pronotum is thinly and minutely punctured, except at the base, the puncturation becoming stronger in the front angle. The scutellum has a few punctures at the base, and the elytra have each a very slight transverse depression behind the scutellum and five rather deep entire punctured dorsal striæ, the intervals between which are scarcely convex, the subsutural one broad, with an irregular row of punctures along the middle. The pygidium bears rather coarse transverse punctures. The mesosternum is produced into a moderately long, compressed, broad blunt process. The legs are short and stout.

♂. The sides of the pronotum are slightly sinuated before the hind angles, which are sharply rectangular. The front tibia is armed with two short sharp teeth, the broad lower lobe of the inner front claw is obtusely angulated near the base, and the longer claw of the middle feet is not cleft.

♀. The pronotum is more convex and rounded, and its hind angles are obtuse. The front tibia has a long curved apical tooth and a minute upper one.

Length, 9–10·5 mm.; breadth, 5·5–7 mm.

CEYLON: Maskeliya (*E. E. Green*, May), Dikoya, 3800–4200 ft. (*G. Lewis*, Dec., Jan.), Diyatalawa (*E. E. Green*, Sept.), Lindula (*H. B. Wyse*), Haldumulla (*Col. J. W. Yerbury*, June), Colombo (*H. P. Green*, Nov.), Hambantota (*H. P. G.*, Sept.).

Type in the British Museum; that of *P. nietneri* in the Vienna Museum.

This species is an exceedingly variable one in colour, that of the elytra especially varying from yellow to violet-black by the appearance of a dark marginal band which gradually extends until only a central yellow spot is left upon each elytron, which may finally disappear. The clypeus, the sides of the pronotum, the pygidium and the legs may similarly be light or dark. Many names have been given to different phases in this sequence of changes, and many more might be given if such names had any value, which is doubtful. There seems indeed to be no logical stopping-place until a name has been given to every individual.

The following names have been published by Kraatz (Deutsche Ent. Zeits. 1892, p. 263) and Ohaus (Stett. Ent. Zeit. 1897, p. 345 & Ent. Nachr. 1899, p. 220):—

Var. *lateralis*, Kr. Clypeus, sides of pronotum, elytra, pygidium and legs pale.
Var. *viridipes*, Kr. Legs metallic green.
Var. *semilimbata*, Oh. Elytra with a fine dark margin behind.
Var. *humeralis*, Oh. Elytra with posterior margin and humeral dark spot.
Var. *limbata*, Oh. Dark margins nearly complete.
Var. *aucta*, Oh. Dark marginal line broader.
(Var. *diffusa*, Oh.) = typical *discalis*, Walker. Dark margin very broad.
Var. *stolata*, Oh. Yellow pigment reduced to a longitudinal stripe.
Var. *microphthalmica*, Oh. Yellow pigment reduced to a small central spot.
Var. *apicalis*, Oh. Yellow pigment remaining only near the hind angle.
Var. *nigripennis*, Oh. Elytra entirely black.
Var. *violaceipennis*, Oh. Elytra entirely blue-black.
Var. *suturalis*, Oh. Elytra entirely black, with the sutural edges green.
Var. *viridula*, Kr. Entirely green, with pale legs.
Var. *viridissima*, Oh. Body and legs green.

Popillia discalis destroys the blossoms and young leaves of roses in Ceylon, according to Mr. E. E. Green.

62. **Popillia propinqua.** (Plate IV, fig. 25.)

Popillia propinqua, Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 47.

Deep metallic green or coppery above and beneath, with the elytra alone testaceous.

Shortly ovate and very shining above. The clypeus and forehead are densely rugose and the vertex strongly punctured. The pronotum is very shining, minutely punctured at the front and sides, with a close fringe of white setæ on each side. The scutellum is almost smooth. The elytra have each a distinct transverse impression before the middle and five punctured dorsal striæ, the subsutural interval being broad and bearing a row of strong punctures anteriorly. The pygidium is coarsely punctured and has two large round setose patches at the base and numerous scattered setæ towards the apex. The mesosternal process is strongly curved and sharply pointed.

♂. The inner front claw is broad, but scarcely angulated, and the outer claw of the middle tarsus is entire.

Length, 8·5–10 mm.; breadth, 5–6·5 mm.

MADRAS: Travancore (*Mrs. G. S. Imray*).

Type in the British Museum; co-types in Mr. H. E. Andrewes' collection.

This has the closest resemblance to *P. discalis* and *P. complanata*, but, with the exception of the elytra, it is uniformly dark in colour, the legs, clypeus and sides of the pronotum being apparently always without the pale colouring which usually tinges them in the other two species. The foveæ before the middle of the elytra are deeper, and the mesosternal process is more pointed. The male is immediately distinguishable from that of *P. complanata* by the fact that the outer claw of the middle tarsus is not cleft.

63. **Popillia complanata.** (Plate IV, fig. 23.)

Popillia complanata, Newm.,* Mag. Nat. Hist. (2) ii, 1838, p. 337; id., Trans. Ent. Soc. Lond. iii, 1841, p. 40; Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 46.

Deep metallic green or coppery red, with the elytra testaceous, and the clypeus, lateral margins of the prothorax, femora, tibiæ and extremity of the abdomen reddish.

It is rather broadly ovate in shape and very smooth and shining. The lateral margins of the pronotum are rather broadly bordered with white setæ, and the pygidium bears two roundish patches of similar setæ at the base and rather numerous scattered setæ on its posterior part. The sides of the body beneath are moderately well clothed with similar setæ. The clypeus is densely rugose, the forehead closely punctured, the pronotum minutely punctured in front, more strongly in the front angles. The scutellum bears a few punctures, and the elytra have each a feeble impression behind the scutellum and five strongly impressed and punctured

dorsal striæ; the subsutural interval is broad and bears a row of strong punctures along the middle. The pygidium is rather coarsely and closely rugose. The mesosternal process is strongly compressed and curved and rather sharp at the extremity.

♂. The two teeth of the front tibia are very short and sharp, and the longer claw of the middle foot is cleft at the tip.

Length, 8·5–11 mm.; breadth, 4·5–7 mm.

MADRAS: Nilgiri Hills, Nadgani, 2500 ft. (*H. L. Andrewes*, April), Malabar, Mahé (*Maindron*); BOMBAY: N. Kanara (*T. R. D. Bell*).

Type in the Oxford Museum.

This has a very close resemblance to *P. discalis*, Walk., with which it has long been supposed to be identical. The males can be easily distinguished by the important difference in the longer claw of the middle foot, which is cleft in *P. complanata* and simple in *P. discalis*. The females are less readily separated, but the pygidium is much more deeply and closely sculptured in *P. complanata* and the thoracic border of white hairs is broader. The mesosternal process is more sharply pointed in both sexes of this species.

64. **Popillia schizonycha.** (Plate IV, fig. 20.)

Popillia schizonycha, Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 50.

Deep green, golden green or coppery, with the elytra generally darker green or blue-black, but sometimes reddish with a metallic green suffusion and the sides more or less dark. The clypeus, legs and extremity of the abdomen are sometimes also of a deep red colour.

It is a broad and massive insect, smooth and shining, and moderately convex above. The sides of the pronotum are conspicuously bordered with white hairs, the pygidium bears a pair of large round hair-patches at the base, and the lower surface is rather thickly clothed at the sides with similar white hairs. The clypeus is rugosely punctured, the forehead densely, and the scutellum and front and sides of the pronotum very finely and sparsely. The elytra have each a deep fovea behind the scutellum and five deeply impressed and punctured dorsal striæ; the subsutural interval is broad and has an irregular line of large punctures along the middle. The pygidium is coarsely transversely striolated and the mesosternal process is strongly compressed at the extremity.

♂. The two teeth of the front tibia are short and sharp, the inner front claw has a broad angulated lower lobe, and the outer middle claw is cleft at the tip.

Length, 11–12·5 mm.; breadth, 6·5–7·5 mm.

MADRAS: Nilgiri Hills (*H. L. Andrewes*), Bangalore.

Type in the British Museum.

65. **Popillia sulcata.**

Popillia sulcata, Redt.,* Hügel's Kaschmir, iv, 2, 1848, p. 527.
Popillia scutellaris, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 199.

Shining black or blue-black beneath, and coppery, deep metallic green or blue-black above, the elytra being orange or reddish, sometimes with a slight metallic suffusion, with the lateral margins black. The head, pronotum, legs and sides of the body beneath are clothed with rather long, erect, but not closely-set yellowish hairs.

The body is oval and compact, without prominent shoulders, the greatest width being behind them. The clypeus is broadly rounded and rugose, and the forehead very coarsely and closely punctured. The pronotum is rugosely punctured, except in the posterior part, where it is strongly but not densely punctured; it is very convex and the sides are strongly rounded, with the front angles not sharp, and the hind angles almost obsolete. The scutellum is rather strongly punctured. Each elytron bears six deep and strongly punctured striæ (the second abbreviated behind) and a rather deep but not large pit before the middle. The pygidium is closely and rugosely punctured, with scattered hairs towards the apex, but without basal hairy patches. The mesosternal process forms a vertical lamina, which is only very slightly produced.

♂. The terminal tooth of the front tibia is very short and sharp, and the inner front claw strongly dilated.

♀. The terminal tooth of the front tibia is long, blunt and strongly curved.

Length, 8·5–9 mm.; breadth, 5–5·5 mm.

KASHMIR (type); UNITED PROVINCES: Mussoorie, 7500 ft. (*H. Maxwell Lefroy*, Aug.), Landour.

Type in the Vienna Museum; that of *P. scutellaris* in the Paris Museum.

66. **Popillia simlana.**

Popillia simlana, Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 52.

Golden or coppery green, with the legs and lower surface dark coppery, the elytra testaceous with a metallic suffusion, and the extreme lateral margins coppery black.

The body is ovate and a little depressed. The clypeus is confluently punctured, broad, with the front margin nearly straight and strongly reflexed. The forehead is rugosely punctured and thinly clothed with erect yellow hairs. The pronotum is very strongly punctured, the punctures becoming confluent near the lateral margins, which are scarcely curved, angulated near the middle, with the front angles acute and the hind angles obtuse; the whole surface is thinly clothed with erect yellowish hairs. The scutellum bears only a few fine punctures, and the elytra

have each five complete punctured dorsal striæ, the 2nd interval very wide and bearing many large irregular punctures, and the 4th having a few punctures which form an imperfect row along the middle. The pygidium bears coarse and not close transverse striolæ and is decorated at the base with two tufts of greyish hairs. The lower surface and legs are similarly clothed with long but not close grey hairs, except at the middle of the abdomen. The mesosternal process is vertical in front and not produced beyond the front coxæ.

♂. The inner front claw has the lower lobe very broad, the front tibia is armed with two short and sharp teeth, and the hind tarsi are rather longer and more slender than in the female.

Length, 8–9 mm.; breadth, 4–5 mm.

PUNJAB: Simla, 7000 ft. (*H. Chippendale*, June); NEPAL: Khatmandu (*Col. Manners Smith*, June).

Type in the British Museum.

This species exactly resembles *P. pilosa*, but is easily distinguished by the broad reflexed clypeus. The elytral sculpture is also slightly different.

67. Popillia pilosa.

Popillia pilosa, Arrow, Ann. Mag. Nat. Hist. (8) xii, 1913, p. 51.

Golden or coppery green, with the lower surface and legs darker coppery green, the elytra testaceous with a metallic sheen and with their outer edges coppery black.

The body is ovate and a little depressed. The clypeus is rugose and short, with the front margin feebly rounded and slightly reflexed. The forehead is rugosely punctured and clothed with long erect yellow hairs, and the vertex strongly and distinctly punctured. The pronotum bears coarse punctures, which become confluent near the sides, and is clothed with long but not close yellow hairs; the lateral margins are scarcely curved, angulated before the middle, with the front and hind angles sharp, the former produced, the latter right angles. The scutellum bears a few unequal punctures, and each elytron bears seven nearly equidistant dorsal punctured striæ, the 2nd and 5th less impressed than the rest and abbreviated behind. There is no abrupt lateral flange. The pygidium is punctured and bears two basal tufts of yellow hairs. The lower surface is clothed, except along the middle line of the abdomen, with long yellowish hairs, and the mesosternal process is short and vertical in front.

♂. The inner front claw has the lower lobe very broad and angulate near the base, the two teeth of the front tibia are short and sharp, and the hind tarsi are rather longer and more slender than those of the female.

Length, 7·5–8·5 mm.; breadth, 4·5 mm.

UNITED PROVINCES: Dehra Dun, Kumaon, Almora, Lansdowne, Garhwal (*A. G. Lyell*, June), Ranikhet (*H. G. Champion*).

Type in the British Museum.

68. **Popillia minuta.**

Popillia minuta, Hope,* Gray's Zool. Misc. 1831, p. 23.

Deep metallic green, rather darker beneath, with the elytra testaceous, narrowly margined with black.

It is small, short and compact. The clypeus is short and rugose, with the front margin feebly rounded and reflexed. The forehead is similarly rugose and clothed with rather long, not thick, erect grey hairs, and the vertex is rather strongly and closely punctured. The pronotum is nearly twice as wide as it is long, very closely and coarsely rugose, except in the posterior part, and clothed, not very thickly, with erect grey hairs; the sides are angulated before the middle and nearly straight from there to the angles, which are sharp, the front ones acute, the hind obtuse. The scutellum is coarsely punctured, and each elytron bears five deep punctured dorsal striæ; the second and fourth intervals are very little wider than the others and bear only a very few scattered punctures. The pygidium is rather coarsely punctured and decorated with a patch of rather long whitish hairs on each side of the base and similar but longer scattered hairs at the sides. The mesosternum forms a very slightly produced broad lamina between the coxæ, and the body is clothed beneath with long and moderately thick grey hair.

♂. The club of the antenna is very long, the inner front claw is deeply cleft and its inner lobe very broad, and the teeth of the front tibia are very sharp.

Length, 6·5 mm.; breadth, 4 mm.

NEPAL.

Type in the British Museum.

The unique type is not in very good condition.

69. **Popillia pilicollis.**

Popillia pilicollis, Kraatz,* Deutsche Ent. Zeits. 1892, p. 278.

Coppery green, often varying from bright green to fiery red in different parts, the elytra orange, with narrow black margins and tinged with metallic green.

The body is rather long and narrow, and not very convex above. The clypeus is broadly rounded, and, with the forehead, densely granularly rugose and closely clothed with erect greyish setæ. The pronotum is rugosely punctured and entirely clothed with similar setæ, except upon a narrow longitudinal median carina, which is smooth and shining and reaches the base, but not the front margin; the lateral margins are angulated before the middle and almost straight from there to the angles, of which the front are very acute and the hind obtuse. The scutellum bears a few strong punctures, and the elytra have six regular dorsal rows of deeply punctured lines, the intervals being narrow, except the subsutural one, which is very broad and strongly and irregularly punctured; the sides are regularly contracted towards the

extremity and without abrupt flanges. The pygidium is rather flat and coarsely punctured. The metasternum and abdomen are very shining in the middle, and the mesosternal process is nearly vertical in front.

♂. The front tibia is broad, and the two teeth are very short and sharp.

♀. The front tibia is slender, with a long terminal tooth.

Length, 8–9 mm.; breadth, 4–5 mm.

SIKKIM: Gopaldhara, Rungbong Valley, 6300 ft. (*H. Stevens*), Kurseong, 5000 ft. (*N. Annandale*, May), Mungphu (*E. T. Atkinson*); NEPAL: Khatmandu (Ind. Mus.); ASSAM: Pedong (*Desgodins*).

Type in the Berlin Entomological Museum.

I have found by an examination of the type in the Paris Museum that *Popillia dichroa*, Blanch., attributed to the "Indes Orientales," is the Chinese *P. castanoptera*, Hope. It is therefore omitted here. Burmeister recorded it from Assam, but he seems to have associated specimens of several species under the name.

P. sandyx of the Munich Catalogue seems to have no real existence.

Genus **CALLISTOPOPILLIA**.

Popillia, subg. *Callistopopillia*, Ohaus, Deutsche Ent. Zeits. 1903, p. 219.

TYPE, *Anomala iris*, Cand.

Range. N. India, W. China.

Body moderately broad and not very convex. Clypeus rather large, nearly semicircular, with the suture deeply impressed. Prothorax strongly narrowed to the front, with all the angles sharp and the base gently excised before the scutellum. Scutellum broad and equilateral, with the apex blunt. Sides of elytra gently impressed behind the shoulders. Pygidium with a few inconspicuous erect hairs at the sides. Mesosternum prominent between the middle coxæ. Hind coxæ with long and acute backwardly produced processes internally. One claw of the middle and hind tarsi cleft. Front tibia bidentate

♂. Terminal tooth of the front tibia short and sharp. Lower lobe of the inner front claw strongly dilated.

♀. Terminal tooth of the front tibia long, curved and blunt. Sides of the elytra dilated behind the shoulders.

Key to the Species.

Mesosternum forming a horizontal process .... *iris*, Cand.
Mesosternum vertical in front .... *lurida*, sp. n.

70. Callistopopillia iris.

Anomala iris, Candeze,* Col. Hefte, v, 1869, p. 43.

Bright metallic green above and beneath, with the sides of the elytra (but not the extreme edges) golden and in part fiery-red, the tarsi blue-black.

The whole surface is extremely glossy and shining, with scanty hairs beneath and upon the pygidium. The form is ovate (rather broadly in the female) and not very convex. The clypeus is broadly rounded and coarsely and rugosely punctured, with the suture deeply impressed. The forehead is finely and closely punctured. The pronotum has a few minute scattered punctures at the sides; the lateral margins are strongly bisinuated, sharply convergent in front, and all the angles acute. The basal margin is very gently excised in the middle and more strongly on each side. The scutellum is nearly equilateral, with the sides curved and the apex blunt. The elytra are lightly striolated, with obsolescent punctures in the striæ and the intervals smooth. The pygidium is smooth in the middle, rugosely punctured and scantily hairy at the sides, and bearing a few long hairs just before the apex. The mesosternum is produced forward into a strong, nearly straight, compressed process, blunt at the end. The metasternum is smooth in the middle, coarsely rugose at the sides, and the abdomen is almost smooth.

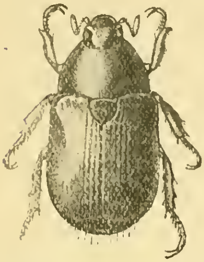

Fig. 21.—*Callistopopillia iris*, male.

Length, 9–12·5 mm.; breadth, 6·5–8 mm.

SIKKIM: Kurseong (*Bretaudeau*), Mungphu (*E. T. Atkinson*); KASHMIR: Ladak (*Stoliczka*); TIBET: Yatong, 10,500 ft. (*A. E. Hobson*).

Type in the Brussels Museum.

71. Callistopopillia lurida, sp. nov.

Steely bluish or greenish black, with the scutellum, elytra (except at the edges), the femora and parts of the tibiæ, and the lower surface of the body lurid coppery-red.

It is oval in shape and very smooth and shining above, with the lower surface, legs and posterior part of the pygidium clothed with rather long greyish hair. The head is densely rugose, except upon the vertex, which is almost smooth. The clypeus is broadly semicircular. The pronotum bears only a few minute scattered punctures; the sides are angulated in the middle, nearly straight in front of the angulation, slightly concave behind, with the front angles blunt but a little produced, the hind angles acute and the base very feebly excised before the scutellum. The scutellum is scarcely punctured, very short and rounded at the apex. The elytra exhibit feebly impressed lines

of minute, almost obsolete, punctures, which become irregular grooves upon the posterior part. The pygidium is smooth in the middle and bears coarse irregular punctures at the sides. The mesosternum forms a quadrate lamina nearly vertical in front.

♂. The front tibia is broad and armed with a sharp terminal tooth and an obtuse upper one. The front tarsus is very short, the claw-joint very large and the inner claw very broad.

Length, 10–13 mm.; breadth, 5·5–7 mm.

N. India.

This was taken long ago by Capt. Boys, but the exact locality is not recorded.

Types (♂ and ♀) in the British Museum; co-type in the Oxford University Museum.

Genus **MACROPOPILLIA**.

Macropopillia, Ohaus, Deutsche Ent. Zeits. 1905, p. 94.

Type, *Macropopillia arrowi*, Ohaus.

Range. South India.

Body rather large, ovate and convex. Prothorax not margined behind, the base abruptly emarginate before the scutellum, the sides gently curved and all the angles fairly sharp, almost right angles, the hind angles exactly meeting the humeral angles of the elytra. Mesosternum produced into a strong, blunt curved process. Legs not very long. Front tibiæ armed with two external teeth; the inner claw of the front and outer claw of the middle tarsus cleft in both sexes.

Macropopillia has almost the characters of *Popillia*, but differs by its much larger size and its regular oval shape, with the prothorax dilating to the hind angles and exactly fitted to the elytra, the shoulders of which are therefore not prominent. The pygidium has no hairy tufts.

Only a single species is known.

72. **Macropopillia arrowi.** (Plate I, fig. 8.)

Macropopillia arrowi, Ohaus, Deutsche Ent. Zeits. 1905, p. 94.

Orange above, with a metallic suffusion, and with two longitudinal stripes on the forehead, two oblique patches upon the pronotum, extending from the front to the hind margin and widest a little before the base, where they are angulated internally, and a small median spot on each side, dark green. The lower surface and the pygidium are dark green, the latter having a broad longitudinal median orange stripe, and the dorsal segments of the abdomen are similarly banded from side to side. The femora and tibiæ are metallic red and the tarsi black.

The body is large, broadly ovate and convex. The clypeus is broadly rounded and finely punctate-rugose, the forehead finely

punctured. The pronotum and scutellum are almost smooth, with a few minute scattered punctures; the sides of the former are gently curved, the hind angles almost right angles and the base very gently but abruptly excised in the middle. The elytra are rather evenly but shallowly striated, the striæ containing fine, partly confluent and rather irregular punctures. The pygidium bears a few scattered punctures; the metasternum is rugosely punctured and very scantily hairy at the sides, and the abdomen strongly but scantily punctured.

The extremity of the front tibia is pointed in the male and very blunt and rounded in the female.

Length, 18–24 mm.; breadth, 10–14 mm.

MADRAS: Utakamand (Indian Mus.), Trichinopoli (Paris Mus.), Palni Hills (June—Madras Museum), Kodaikanal (*T. V. Campbell*).

Type in Dr. Ohaus' collection.

TRICHANOMALA, gen. nov.

TYPE, *Popillia fimbriata*, Newm.

Range. The Himalayan Region.

Small, ovate, depressed above. Clypeus small and rounded. Pronotum not closely adapted to the elytra at the shoulders, gently lobed and completely margined at the base, and having a fringe of decumbent hairs all round the margin. Mesothoracic epimera ascending and interposed between the pronotum and shoulders. Mesosternum not produced. Legs rather long, with the front tibiæ bidentate and the larger claw of the front and middle feet cleft. The lower surface of the body and the pygidium are thickly clothed with hairs.

The type of this genus is *Popillia fimbriata*, Newm., and a second species is *Phyllopertha dentipennis*, Fairm., which is very similar, but besides the curious spinose terminations of the elytra (common to both sexes), the pygidium is shining in the male and rough in the female.

The genus has the characters of *Anomala*, but differs in the ascending epimera (in which it resembles *Popillia*), the hairy margins of the pronotum, etc.

73. Trichanomala fimbriata.

Popillia fimbriata, Newm.,* Trans. Ent. Soc. Lond. iii, 1841, p. 47.

The body is elongate-oval and rather depressed. The head is coarsely but closely punctured, with the clypeus small, rounded and moderately reflexed at the margin. The pronotum is strongly and not very closely punctured, with the sides rounded and narrowed to the front, the front angles very sharp, the hind angles obtusely rounded and the base broadly lobed. The disc is encircled by a row of white hairs lying flat, at right angles to the margin, but becoming inconspicuous in the middle of the front and hind margins. The scutellum is strongly punctured at the

sides, each puncture bearing a white seta, but is smooth along the middle. The elytra are smooth and shining, lightly punctured in indistinct rows. The propygidium is clothed, like the sternum and abdomen, with white hairs lying closely in longitudinal rows, and the pygidium is finely shagreened, bearing only a very few scattered setæ. The legs are rather long, the front tibiæ sharply bidentate, and the longer claw of the front and middle feet cleft.

Fig. 22.—*Trichanomala fimbriata*, male.

♂. Dark bronzy or bronzy green, with the elytra pale yellow, except at the outer margins, which are black. The teeth of the front tibia are very sharp, the front tarsi contracted, the claw-joint very large.

♀. Bronzy or bronzy green with pale yellow elytra, the outer margins of which are imperfectly, or not at all, bordered with black. The prothorax has bright yellow lateral edges, which extend partly or entirely round the base, and the femora and tibiæ may be of the same colour. The elytra are angularly dilated behind the shoulders.

Length, 7–8·5 mm.; breadth, 4–5 mm.

Sikkim: Rungpo, 1400 ft., Sept.; United Provinces: Dehra Dun, W. Almora, Kumaon (*H. G. Champion*, April).

Type in the Oxford University Museum.

The coloration described is that normal to the respective sexes, but probably a long series would show every stage of transition. Of six males which I have seen, one has the female coloration.

The type (a female) belongs to a dark variety with the elytra entirely black and the remainder of the body dark metallic green.

Genus SPILOPOPILLIA.

Spilopopillia, Kraatz, Deutsche Ent. Zeits. 1892, p. 181.

Type, *Popillia 6-guttata*, Fairm.

Range. The Himalayas, Indo-China and S.W. China.

Small, oval in shape and flattened above, very thinly clothed with hair beneath, and very shining and very coarsely sculptured above. The legs are rather long. The clypeus is short and broad, with the front margin quite straight and slightly reflexed. The antennæ are nine-jointed and similar in the two sexes. The pronotum is only very slightly convex, about half as broad again as it is long, dilating from apex to base, where it is widest, with the base gently trisinuate, forming in the middle a broad rounded lobe not at all emarginate before the scutellum. The latter is short, with rather straight sides. The elytra are short, separately

rounded behind and without distinct angles at the suture; the outer margins are slightly flattened, gently dilated behind the shoulders, where they are very broad, and rounded from there to the apices, which are not angular. The mesosternum forms a lamina between the middle coxæ, but is vertical in front and not produced. The pygidium is rather prominent. The front tibia has a sharp apical tooth, but only a minute vestige of an upper one. The longer claw of the front and middle feet is cleft.

♂. All the legs are longer, the front tibia very broad and its apical tooth short and very acute. The inner claw is broad and strongly bent.

♀. The front tibia has a long curved terminal tooth, and there is a slight dilatation of the flattened lateral margins of the elytra just behind the shoulders.

Spilopopillia has all the characters of *Anomala*, but differs in its flattened dorsal surface, the pronotum dilating from apex to base, in its short, broad elytra, strongly rounded behind, the peculiar single-toothed front tibiæ, and in other features.

74. Spilopopillia 6-guttata.

Popillia 6-guttata, Fairm., Ann. Soc. Ent. Belg. xxxi, 1887, p. 115; Kraatz, Deutsche Ent. Zeits. 1892, p. 180, pl. 4, fig. 2.

Metallic green or coppery, with the elytra black or dark brown, their outer margins, the anterior part of their sutural margins, and the legs reddish, and three large round spots upon each elytron bright orange in colour. The first spot adjoins the middle of the anterior margin, the second is before the middle of the outer margin, and the third occupies the centre of the apical part.

Fig. 23.—*Spilopopillia 6-guttata.*

The body is rather broad and depressed. The head is densely rugose, except behind the eyes, where it is strongly punctured. The pronotum is closely covered with large and deep transverse impressions. All the angles are sharp, but the hind angles are not produced. The sides are curved, dilated from apex to base and scarcely angulated in the middle. The scutellum bears large punctures in its basal part. The elytra are rather dilated and flattened at the sides, which are widest a little behind the shoulders, rounded from that point, and separately rounded at the apices; they bear very deep coarsely punctured striæ, and the subsutural interval is broad and irregularly punctured. The pygidium is transversely strigose.

♂. The front tibia is broad and terminates in a short sharp tooth, the front tarsi are short and thick, and the other tarsi long.

Length, 7·5–8·5 mm.; breadth, 4–4·5 mm.

SIKKIM: Kurseong (*Verschraeghen*); ASSAM: Shillong (*E. T. Atkinson, F. W. Champion*).

Type in M. René Oberthür's collection.

Genus **ANOPLANOMALA**, nov.

TYPE, *Anomala globulosa*, Sharp.

Range. Southern India.

Form rather short, compact and convex, with the sternum thickly clothed with rather long, soft hair. Clypeus simply rounded. Mandible entire and rounded at the apex. Maxilla short, armed with short, sharp teeth. Mentum rather long and narrow. Basal margin of the pronotum gently trisinuated and having a complete fine marginal stria. Prosternum and mesosternum without processes. Front tibia bidentate externally and without a distinct terminal spur. Hind tibia short or moderately long, the middle and hind tibiæ without terminal spurs or with a single one only.

Other features are as in *Anomala*.

The two species for which this genus is constituted differ from *Anomala* only in the absence of some or all of the tibial spurs, of which, except in the COPRINÆ, the Lamellicornia have normally one to each front tibia and two to each of the four posterior tibiæ. They are always much larger than the short spines which usually fringe the end of the tibia. These spurs in *Anoplanomala* are wanting, except for a single one upon each of the four hinder tibiæ in the female *A. globulosa* and a single one upon the middle tibia of the male *A. carneola*. The female of the latter is not yet known.

Key to the Species.

Dark in colour: hind femora inflated .... *globulosa*, Sharp.
Pale in colour: hind femora not inflated........ *carneola*, Arrow.

75. Anoplanomala globulosa.

Anomala globulosa, Sharp,* Ann. Mag. Nat. Hist. (7) xii, 1903, p. 471.

Very deep red-brown, with the head and pronotum black, the antennæ and the three basal ventral segments of the abdomen yellow, and the tarsi reddish.

It is a small species, rather shortly ovate in form, very shining and convex, with a rather long but not dense clothing of greyish hairs beneath. The clypeus is nearly semicircular, moderately closely punctured, with the margin strongly reflexed. The forehead is rather rugosely punctured. The pronotum is very finely and sparingly punctured, with the sides well rounded, the front

angles slightly acute, and the hind angles obtuse but well marked; the base is scarcely lobed, very gently trisinuate and finely margined. The scutellum is broad and blunt and bears a few fine punctures, The elytra bear seven similar and equidistant striæ, which are deeply impressed and closely punctured, with narrow convex intervals. The pygidium is evenly and moderately strongly punctured. The mesosternum is not produced. The front tibia has two strong blunt teeth, but is without a terminal spur. The legs are short and stout, the hind femora very thick.

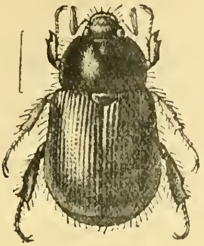

Fig. 24.—*Anoplanomala globulosa*, ♂.

♂. The club of the antenna is as long as the footstalk. The inner claw of the front tarsus is sharp, slightly dilated, but scarcely perceptibly bifid. There are no tibial spurs.

♀. The club of the antenna is about one-third as long as in the male, and the longer claw of the front and middle feet is bifid. There is a single short terminal spur to each of the four posterior tibiæ. The hind femur is extremely short and thick.

Length, 7–8 mm.; breadth, 4·5–5 mm.

MADRAS: Utakamand (*C. A. Barber*), Nilgiri Hills.

Type in the British Museum; co-types in the Cambridge University Museum.

76. Anoplanomala carneola.

Anomala carneola, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 484.

Pale testaceous, with a very faint rosy tinge, the head and pronotum coppery or coppery green. There are usually vague dark markings upon the hind femora and the posterior part of the abdomen.

The form is short and ovate, with the greatest breadth behind the middle of the elytra. The clypeus and forehead are rugosely punctured, the former nearly semicircular, with its margin strongly reflexed. The vertex and pronotum are rather strongly punctured, the sides of the latter angulated about the middle, the front angles nearly right angles, the hind angles obtusely rounded, the base gently sinuated and entirely margined. The scutellum is minutely punctured, and the elytra bear closely packed impressed rows of rather large punctures. The pygidium, metasternum and abdomen are closely and evenly punctured, and the mesosternum is not produced. The front tibia is bidentate, and the larger claw of the front and middle feet cleft. The front tibia is without a visible terminal spur, the middle tibia bears a single one only, and the hind tibia is rather slender, with the internal angle produced into a spine, but without articulated spurs.

♂. The antennal club is moderately long, the last ventral segment of the abdomen scarcely punctured, and the inner front claw broad, acute and cleft.

The female is not known.

Length, 12–13·5 mm.; breadth, 7–7·5 mm.

MADRAS: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

Genus MICRANOMALA.

Micranomala, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 268.

TYPE, *Micranomala indica*, Arrow.

Range. South India, Ceylon and Burma.

Body very small, elongate and rather depressed. Clypeus small, narrowed to the front, where it is strongly reflexed and emarginate, the clypeal suture very strongly marked. Eyes very large, with the inner margin nearly straight dorsally and very oblique, so that the intervening space is nearly twice as wide behind as in front; ante-ocular ridges small and slight. Antennæ 9-jointed, the 1st, 3rd, 4th and 5th joints long and slender, the 6th very short. Prothorax moderately transverse, not much narrowed in front, completely but narrowly margined, with the base almost straight. No sternal process. Legs long; front tibiæ tridentate, the uppermost tooth minute; tarsi and claws slender; front and middle tarsi with the longer claw cleft near the middle of its length. Elytra with membranous outer margins. Labrum horizontal, emarginate in front. Mandible rather weak, rounded externally, the apex forming a very slight and feeble tooth. Maxilla strong, the extremity consisting of two thin rounded lobes, a sharp tooth behind these and an acuminate carina behind that. Mentum elongate, with the anterior part short, broadly crescent-shaped. All the palpi stout, with a long last joint.

♂. Eyes much larger than in the female. Inner front claw strongly dilated.

This genus has most of the characters of *Anomala*, but is clearly separated from it by a combination of peculiar features, the most important of which are the emarginate and biangulate clypeus, the very deep frontal suture, the obliquely placed eyes and the great enlargement of these in the male, and the peculiar bilobed maxillæ and mentum. The cleavage of the claws far from the tip is also an exceptional feature, although this occurs in *Anomala chinensis*, Redt., and a few allied species. The three known species are Indian, all of very small size and apparently rare.

Key to the Species.

1 (2) Clypeus strongly punctured ...... *indica*, Arrow, p. 101.
2 (1) Clypeus smooth.
3 (4) Forehead punctured .... *birmanica*, Arrow, p. 102.
4 (3) Forehead smooth .... *cingalensis*, Arrow, p. 101.

77. Micranomala indica.

Micranomala indica, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 269.

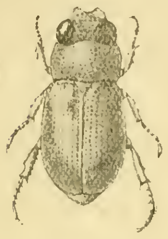

Fig. 25.—*Micranomala indica.*

Pale testaceous, with the head and tarsi reddish. The clypeus is strongly and closely punctured and sub-angularly emarginate in front, with prominent but not acute lateral angles. The forehead is rather strongly channelled along the middle and strongly punctured, but a little less closely than the clypeus. The pronotum is moderately closely and rather evenly punctured and the lateral margins are angulate in the middle, nearly straight and very slightly contracted from there to the front and hind angles, the front angles are acute and the hind obtuse. The scutellum is distinctly punctured, and the elytra bear coarse and close punctures in strongly impressed rows, placed close together at almost equal distances. The pygidium is strongly, but not closely, and the metasternum closely punctured. There is only a very scanty clothing of hairs upon the lower surface. The front tibia bears three sharp teeth.

♂. The eyes are very large, their diameter being rather wider than the intervening space at its narrowest part. The inner front claw is very broad and sharply angulated at its lower edge.

Length, 7·5 mm.; breadth, 3·5 mm.

MADRAS: Coimbatore.

Type in the British Museum.

The single specimen was presented to the British Museum in 1861 by Mr. Walhouse, of the Madras Civil Service.

78. Micranomala cingalensis.

Micranomala cingalensis, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 270.

This species, of which I have seen only two female specimens, is of the same colour and shape as *M. indica*, but a little smaller, the clypeus and forehead are scarcely perceptibly punctured and the latter is not impressed. The sides of the pronotum are rounded in front and not distinctly angulated in the middle. The sculpture of the pronotum, scutellum, elytra and lower surface is almost the same, but the scutellum is longer and more acute, and the pygidium is rather more closely punctured. The front tibia is more slender and has two acute teeth and an extremely feeble upper one.

Length, 7 mm.; breadth, 3·5 mm.

CEYLON: Colombo (*E. E. Green*, Oct.), Miniwangoda (*C. F. S. Baker*, Sept.).

Type in the British Museum.

79. Micranomala birmanica.

Micranomala birmanica, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911 p. 270.

Although a little smaller, this species is superficially extremely like the other two. The clypeus is very smooth and shining, without perceptible punctures ; the lateral margins are prominent at the base and from there nearly straight, and the front margin is nearly straight in the middle, with a distinct but obtuse angle on each side. The forehead is distinctly but not closely punctured, and not impressed in the middle. The pronotum is well punctured, rather closely in the middle, where there is a slight longitudinal groove in the anterior part, and less closely at the sides ; the lateral margins are subangulate in the middle, slightly approximating, but scarcely curved from there to the front and hind angles, the former of which are acute and the latter obtuse. The uppermost (third) tooth of the front tibia is very feeble.

The distinctive features of the male are as in *M. indica.*

Length, 6 mm. ; breadth, 3·25 mm.

Burma : S. Tenasserim, Victoria Point.

Type in the British Museum.

The single specimen was taken by the late E. T. Atkinson.

Genus MIMELA.

Mimela, Kirby, Trans. Linn. Soc. xiv, 1825, p. 101 ; Burm., Handb. Ent. iv, 1, 1844, p. 285 ; Lacord., Gen. Col. iii, 1856, p. 333.

Paracrusis, Newm., Mag. Nat. Hist. iii, 1839, p. 366.

Type, *Mimela chinensis,* Kirby (China).

Range. Tropical Asia, Java, Borneo, Sumatra.

Form variable, generally rather broadly ovate, sometimes globose. Head generally rather broad, with the clypeus short, its margin reflexed and simply rounded. Mentum rather short and broad, divided into two slight rounded lobes in front. Maxilla armed with five very strong parallel teeth in three ranges. Mandible strongly rounded externally and divided at the extremity into two blunt lobes. Pronotum not completely margined behind (except in *M. splendens,* Gyll.), gently lobed before the scutellum. Elytra furnished with a narrow membranous external margin. Prosternum elevated behind the front coxæ, forming a compressed lamina which is bent forward angularly, concealing the line of junction of the coxæ. Mesosternum produced or not. Antennæ 9-jointed. Legs moderately short and stout ; front tibia armed with 1 or 2 teeth ; hind femora usually short and broad ; the larger claw of the front and middle feet cleft.

♂. The lower division of the cleft front claw is broad, and the outer tooth (or teeth) of the front tibia short and sharp. Sometimes the upper tooth found in the female is absent in the male. The last ventral segment is emarginate, and the emargination is filled with a membrane.

The chief distinctive generic feature is the prosternal process, which, behind the front coxæ, is elevated to their level and angularly produced forward, hiding their line of contact and appearing as though interposed between them. In form, colour and sculpture the species present great diversity and superficially are not easily distinguished from that section of the genus *Anomala* in which the posterior marginal stria is absent from the pronotum. Sharp and Ohaus have referred to *Mimela* various small species (*Anomala anopunctata*, Burm., *A. discoidea*, Burm., *A. debilis*, Sharp, etc.) in which a very small and not elbowed prosternal process is traceable, but the inclusion of these seems to me to obliterate entirely the boundary-line between *Mimela* and *Anomala*. Restricting the genus to those species with a well-developed and horizontally-bent process and (almost always) without a marginal stria, I believe *Mimela* to be a natural and homogeneous one. With the exception of a few aberrant species (*Mimela macleayana*, *M. passerinii*, *M. vernicata*, *M. pectoralis* and *M. ohausi*) a particular conformation of the head characterises all the insects composing it. The head is relatively large, but the eyes are small, widely separated from each other, as seen from above, and not at all prominent laterally, probably indicating that the species have markedly diurnal habits. In *Anomala*, as in nearly all other genera of Rutelinæ, the eyes are relatively large, divided by a much narrower space on the top of the head and generally projecting strongly at the sides. The bluntly bilobed mandibles of *Mimela* constitute another distinctive feature.

Key to the Species.

1 (8) Pygidium clothed with conspicuous hair.
2 (3) Hairy clothing lying close to the body .... *macleayana*, Vigors, p. 105.
3 (2) Hairy clothing not lying close to the body.
4 (7) Non-metallic green.
5 (6) Pronotum rather strongly punctured .... *passerinii*, Hope, p. 105.
6 (5) Pronotum very lightly punctured. *vernicata*, Fairm., p. 106.
7 (4) Deep metallic green .... *pectoralis*, Bl., p. 107.
8 (1) Pygidium without conspicuous hair.
9 (56) Upper surface green or chiefly green.
10 (17) Elytra broad and not very convex.
11 (12) Upper surface very brilliant .... *splendens*, Gyll., p. 107.
12 (11) Upper surface dull.
13 (14) Pale green, with very minute sculpture .... *schneideri*, Ohaus, p. 108.
14 (13) Dark green, with coarse sculpture.
15 (16) Upper surface granular .... *sericea*, Ohaus, p. 109.
16 (15) Upper surface coarsely punctured. *pyriformis*, Arrow, p. 109.
17 (10) Body very convex.
18 (25) Elytra decorated with fiery stripes.

19 (20) Mesosternal process distinct and acute . . . . *horsfieldi*, Hope, p. 110.
20 (19) Mesosternum not, or scarcely, produced.
21 (22) Upper surface strongly punctured. *leei*, Swed., p. 111.
22 (21) Upper surface lightly punctured.
23 (24) Head large, with small eyes . . . . *fulgidivittata*, Bl., p. 111.
24 (23) Head rather small, with larger and more prominent eyes . . . *ohausi*, Arrow, p. 112.
25 (18) Elytra not decorated with fiery stripes.
26 (51) Elytra without yellow margin.
27 (36) Upper surface strongly punctured.
28 (29) Pronotum decorated with two dark patches . . . . *vittaticollis*, Burm., p. 113.
29 (28) Uniformly coloured.
30 (31) Mesosternum not produced. . . . . . *subsericea*, Arrow, p. 113.
31 (30) Mesosternum produced.
32 (33) Legs dark metallic green. . . . . *soror*, Arrow, p. 114.
33 (32) Legs reddish.
34 (35) Pygidium not shining . . . . *terminalis*, sp. n., p. 115.
35 (34) Pygidium shining . . . . *princeps*, Hope, p. 115.
36 (27) Upper surface not strongly punctured.
37 (44) Upper surface metallic green.
38 (43) Not globose.
39 (40) Elytra strongly punctured laterally . . . . *lævigata*, Arrow, p. 116.
40 (39) Elytra uniformly punctured.
41 (42) Legs metallic . . . . *viridipes*, sp. n., p. 116.
42 (41) Femora and tibiæ reddish, not metallic . . . . *heterochropus*, Bl., p. 117.
43 (38) Small and globose, with short legs. *atkinsoni*, Arrow, p. 118.
44 (37) Upper surface non-metallic green.
45 (46) Pygidium opaque. . . . . *rugicauda*, sp. n., p. 119.
46 (45) Pygidium very smooth.
47 (48) Upper surface finely punctured . . *amabilis*, Arrow, p. 119.
48 (47) Upper surface almost unpunctured.
49 (50) Small; mesosternum not produced *glabra*, Hope, p. 120.
50 (49) Large; mesosternum produced . . *dehaani*, Hope, p. 120.
51 (26) Outer margins of elytra yellow.
52 (53) Mesosternum produced . . . . *marginalis*, Arrow, p. 121.
53 (52) Mesosternum not produced.
54 (55) Yellow margin sharply defined . . *mundissima*, Walk., p. 122.
55 (54) Yellow margin not sharply defined . . . . *xanthorrhina*, Hope, p. 122.
56 (9) Red, yellow or golden yellow above.
57 (58) Upper surface strongly punctured. *aurelia*, sp. n., p. 123.
58 (57) Upper surface feebly punctured.
59 (60) Elongate; pronotum maculate . . *inscripta*, Nonfr., p. 124.
60 (59) Very short; uniformly coloured above.
61 (62) Front tibia bidentate; hind angles of thorax distinct . . . . *bicolor*, Hope, p. 125.
62 (61) Front tibia unidentate; hind angles of thorax rounded. . . . . . *cyanipes*, Newm., p. 125.

80. **Mimela macleayana.** (Plate I, fig. 7.)

Euchlora macleayana, Vigors,* Zool. Journ. i, 1825, p. 540, pl. 20, fig. 7; Hope, Mag. Nat. Hist. iv, 1840, p. 346.
Mimela macleayana, Burm., Handb. Ent. iv, 1, 1844, p. 291.

Bright coppery red, with the head, pronotum and scutellum golden green and the elytra grass-green, with the outer margins yellowish.

It is a large, elongate-oval insect, with the legs, pygidium and lower surface rather closely and evenly clothed with decumbent grey hair. The eyes are large and prominent, the clypeus is rather small, coarsely rugose and nearly straight in front, and the forehead is strongly punctured. The pronotum is strongly and closely punctured, the punctures being least close in the middle and becoming rugose at the sides; the lateral margins are rounded, the front angles not very sharp and the hind angles obtuse. The scutellum is rather long and bears only a few fine punctures. The elytra are strongly and moderately closely punctured, rather more feebly upon the region adjacent to the scutellum and very coarsely upon the apical part. The pygidium is rugosely punctured, the metasternum smooth in the middle and finely rugose at the sides, and the abdomen coarsely punctured, except along the middle line. The prosternal process is small, with its ventral edge very oblique; the mesosternal process is rather long and narrow; and the front tibia has no lateral tooth. A specimen in the Indian Museum (in bad condition) has the punctures of the elytra almost obliterated.

♂. The front tibia is broad and its apex is very sharp, but scarcely produced; the pygidium is convex, with its extremity bare and smooth; and the antennæ are rather long.

♀. The apical tooth of the front tibia is long and curved, and the pygidium is oblique and rather flat.

Length, 24–28 mm.; breadth, 14–16 mm.

Ceylon: Wellawaya (*E. E. Green*, Nov.), Puttalam (*C. F. S. Baker*), Iranaimadu (*C. F. S. Baker*, Dec.); Mysore: Shimoga; Central Provinces: Nagpur (*E. A. D'Abreu*, July).

Type in the British Museum.

This beautiful insect is not uncommon in Ceylon and has evidently a wide range. A single specimen has been sent to me from Nagpur, taken in a garden.

81. **Mimela passerinii.**

Mimela passerinii, Hope,* Proc. Linn. Soc. i, 1842, p. 128.
Mimela limbata, Burm., Handb. Ent. iv, 2, 1855, p. 508.
Mimela pomacea, Bates, The Entomologist, xxiii, 1890, p. 245.

Deep grass-green above, with the clypeus, the sides of the pronotum and the sides and apices of the elytra vaguely paler, the lower surface reddish coppery, the femora orange, the tibiæ dark red and the tarsi nearly black.

The body is elongate-oval, moderately shining, with the breast rather densely and the abdomen and pygidium thinly clothed with long yellowish-grey hair. The eyes are large and prominent, the clypeus transversely rectangular with the angles only slightly rounded, and the forehead and vertex strongly and irregularly, but not coarsely, punctured. The pronotum is rather short, strongly and moderately closely and evenly punctured, with the sides gently rounded, the front angles acute, the hind angles well-marked and not very obtuse, and the base strongly trisinuate. The scutellum is minutely, and the elytra strongly and closely punctured, many of the punctures forming impressed longitudinal lines. The pygidium is metallic green and finely and densely granulated. The metasternum is smooth and shining in the middle and finely and densely punctured at the sides. The mesosternal process is moderately long, very narrow and acute. The abdomen is irregularly punctured. The front tibia is bidentate.

♂. The club of the antenna is very long (as long as the footstalk), and the teeth of the front tibia are acute, the upper one being minute.

♀. The terminal tooth of the front tibia is very long and blunt.

Length, 13–23 mm.; breadth, 9–12 mm.

SIKKIM: Darjiling (*Verschraeghen*), Mungphu (*E. T. Atkinson*), Jellapahar, 7500 ft., Lachen Valley, 7000 ft.; KASHMIR: Campbellpur; TIBET; W. CHINA.

Type in the Oxford University Museum; that of *M. limbata* in the Halle Museum and of *M. pomacea* in M. Réne Oberthür's collection.

82. Mimela vernicata.

Spilota vernicata, Fairmaire,* Notes Leyd. Mus. 1896, p. 88.
Mimela biplagiata, Ohaus, Deutsche Ent. Zeits. 1908, p. 642 (n. syn.).

Testaceous beneath, including the legs, and pea-green above, the middle of the head, that of the pronotum, except a large rounded patch on each side, and the extreme outer margins of the elytra being vaguely paler. The pygidium is brilliant metallic green, and the tibiæ and tarsi are coppery green.

The body is shortly oblong and moderately convex. The clypeus is short, nearly straight in front and densely punctured, the eyes are large and prominent, and the forehead and vertex are strongly but sparingly punctured. The pronotum is finely and rather sparingly punctured, well rounded at the sides, with the front and hind angles nearly right angles, but the latter slightly more obtuse. The scutellum is very feebly, and the elytra are closely and rather rugosely punctured, except near the base, where they are rather smooth; there are irregular longitudinal striæ, which become deep at the apices. The pygidium is densely granulated and very thinly hairy, the metasternum rather thickly clothed with yellow hair, and the abdomen almost smooth. The mesosternal process is

short, but very narrow and sharp, and the front tibia has a single long sharp tooth in the male and two teeth in the female, the terminal one long and blunt and the upper one short.

Length, 14–16 mm.; breadth, 8–9 mm.

SIKKIM: Kurseong, 5000 ft., (*Verschraeghen*, July—Ind. Mus.), Gopaldhara, Rungbong Valley (*W. K. Webb*); BHUTAN: Maria Basti (*L. Durel*).

Type in the Paris Museum; that of *M. biplagiata* in Dr. Ohaus' collection.

83. **Mimela pectoralis.**

Mimela pectoralis, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 197.

Deep metallic green, with the tibiæ and tarsi coppery red, and the mouth, antennæ, front and middle femora, and the extreme lateral margins of the prothorax testaceous.

The body is rather elongate, convex, and clothed rather thickly upon the lower surface and femora with long pale yellow hair, less thickly upon the head and pygidium. The head is coarsely rugose, with the eyes very large, and the clypeus rather narrow and subrectangular. The pronotum is closely punctured, with an incomplete smooth median longitudinal line, the lateral margins strongly rounded, and all the angles distinct, but not sharp. The scutellum is short and bears only a few punctures. The elytra are very strongly and closely but irregularly punctured, with irregular impressed lines of confluent punctures and a smooth line adjoining the suture. The pygidium is scantily punctured; the metasternum deeply impressed in the middle and very finely and densely punctured at the sides. The abdomen is almost smooth in the middle. The prosternal process is rounded behind and the mesosternum is not produced. The front tibia is bidentate.

♂. The club of the antenna is very long.

Length, 17 mm.; breadth, 8 mm.

PUNJAB: Lahore (*Mrs. Mulvany*), Simla.

Type in the Paris Museum.

84. **Mimela splendens.**

Melolontha splendens, Gyll., Schönh. Syn. Ins. i, 3, 1817, App., p. 110.
Mimela lathami, Hope,* Trans. Ent. Soc. Lond. i, 1835, p. 113.
Mimela lucidula, id.,* l. c.
Mimela concolor, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 196 (n. syn.).
Mimela gaschkevitchi, Motch., Études Ent. vi, 1857, p. 32.
Mimela simplex, Bates, Proc. Zool. Soc. 1866, p. 345; op. cit. 1888, p. 375 (n. syn.).

Brilliant metallic green or golden green, generally with the legs and extreme margins of the prothorax and elytra deeper green, and the anterior, lateral and posterior parts of the elytra fiery red.

This species is rather short and broad in form and not very

convex, with the lateral margins of the elytra distinctly flattened. It is extremely brilliant above and only very thinly clothed with short greyish hair beneath. The head is moderately large, the eyes small and far apart, as seen from above, the clypeus finely coriaceous, straight in front and rounded at the sides. The pronotum is extremely smooth and shining, with exceedingly fine scattered punctures, its sides gently rounded, the front angles acutely produced and the hind angles slightly obtuse. There is a deeply impressed marginal line at the base, and an imperfect longitudinal median impression. The scutellum is finely punctured and has an impressed marginal line. The elytra are rather feebly, sometimes scarcely perceptibly, punctured, but generally exhibit slight transverse wrinkles. The pygidium is very lightly or not at all punctured, very smooth and shining, with a deep fovea in the angle on each side. The mesosternum is not produced. The legs are rather long, the front tibia bidentate, and the longer front and middle claws cleft.

♂. The teeth of the front tibia are short and sharp.

♀. The teeth of the front tibia are very blunt.

Length, 17–23 mm.; breadth, 9·5–12 mm.

Burma: S. Shan States (*F. M. Mackwood*, April); Tonkin; China; Korea; Japan.

Type in the Stockholm Museum; those of *M. lathami* and *M. lucidula* in the Oxford Museum, of *M. concolor* in the Paris Museum, and of *M. simplex* in M. René Oberthür's collection.

The locality, Sylhet, quoted by Blanchard, seems a little doubtful.

85. Mimela schneideri.

Mimela schneideri, Ohaus, Deutsche Ent. Zeits. 1905, p. 89.

Upper surface (with pygidium) entirely pale pea-green, with a very faint pinkish lustre, minutely coriaceous and subopaque; the lower surface, legs and antennæ shining reddish-testaceous.

The body is elongate-oval and not very convex. The clypeus and forehead are rather finely rugosely punctured, with the clypeus rather broad and nearly straight in front. The pronotum is finely and regularly punctured, the punctures being close and subrugose at the sides and becoming very minute and inconspicuous in the middle; the front angles are moderately sharp, and the hind angles distinct but obtuse. The scutellum is scarcely punctured, not very short. The elytra are very finely and evenly punctured and have scarcely traceable impressed lines. The pygidium is rather more strongly punctured. The metasternum is smooth and shining in the middle, closely and finely punctured and clothed with short grey pubescence at the sides, and the abdomen bears fine scattered punctures. The prosternal process is well developed and laminar, but is rounded behind and only slightly produced forwards. The mesosternal process is short, but very sharp. The front tibia is feebly bidentate and the hind tarsi are rather thick.

♂. The inner division of the inner tarsal claw is very broad, and the outer division very minute. The club of the antenna is as long as the footstalk.

Length, 19 mm.; breadth, 11 mm.

ASSAM: Manipur (*W. Doherty*), Naga Hills, Kohima, 4000–5000 ft. (*H. C. Tytler*); BURMA: Ruby Mines (*W. Doherty*), Maymyo (*C. Rodgers*, Oct.).

Type in Dr. Ohaus' collection.

The colour, subopaque surface and form of the prosternal process of this species are all highly distinctive.

86. Mimela sericea.

Mimela sericea, Ohaus,* Deutsche Ent. Zeits. 1905, p. 88.

Deep green above and orange-brown beneath, with a slight metallic lustre, especially at the sides, the femora orange and the tibiæ and tarsi coppery.

The body is rather flat, ovate and broad behind. The whole upper surface (with the pygidium) is granular and opaque, and the outer face of the tibiæ is similarly, but rather less finely granular or rugose. Each elytron has an inconspicuous stripe, a little more shining than the remaining surface, running parallel with the outer margin from the shoulder to the outer part of the apical edge, and defined by a line of punctures on each side. The clypeus is broad and continuously rounded, and the eyes are rather small and far apart. The pronotum is short, with the front angles very sharp and the hind angles well marked. The metasternum is smooth in the middle and very finely rugose at the sides, where there is an exceedingly fine and scarcely perceptible grey pubescence. The abdomen is finely and irregularly punctured, rather rugosely at the sides. The mesosternum is not produced, and the front tibia is distinctly bidentate.

Length, 16–20 mm.; breadth, 9·5–11·5 mm.

SIKKIM: Singla, Darjiling District, 1500 ft. (June—Ind. Mus.); NEPAL.

Type in Dr. Ohaus' collection.

87. Mimela pyriformis.

Mimela pyriformis, Arrow, Ann. Mag. Nat. Hist. (8) i, 1908, p. 246.

Metallic green, only slightly shining, with the outer margins of the clypeus, prothorax and elytra, the lower surface, legs and antennæ, testaceous, with a greenish-golden reflection.

It is moderately elongate and convex and very broad behind. The head is large, with the eyes small and wide apart, the clypeus broadly rounded and densely rugose, and the forehead and vertex densely and confluently punctured. The pronotum is very densely punctured, with its sides rather feebly rounded, the front angles acute and the hind angles well marked but obtuse. The scutellum

is moderately punctured, the elytra densely and uniformly, with a smooth juxta-sutural line and an almost obliterated dorsal one; the outer edges are nearly straight and diverge slightly for almost their whole length, so that their greatest breadth is very little before the extremity; they are long and slope rather gradually at the hinder part. The pygidium is short and broad, finely granulated and thinly clothed with short golden hairs. The meso-sternal process is small but acutely produced. The front tibiæ are distinctly bidentate and the antennæ slender.

Length, 23 mm.; breadth, 14 mm.

Assam: Naga Hills, Khasi Hills, Shillong (*E. A. D'Abreu*, August).

Type in the British Museum.

The gradual slope of the elytra in this species at the sides and posterior end, and their breadth at the extremity, produce a quite peculiar appearance. There is an approximation to the curious form of *M. sericea*, Ohaus, but *M. pyriformis* is larger, more convex and much less opaque.

88. **Mimela horsfieldi.**

Mimela horsfieldi, Hope,* Trans. Ent. Soc. Lond. i, 1836, p. 114; Burm., Handb. Ent. iv, 1, 1844, p. 290; Arrow, Trans. Ent. Soc. Lond. 1899, p. 273.

Mimela vittata, Redt.,* Hügel's Kaschmir, iv, 2, 1848, p. 525, pl. 25, fig. 1

Deep metallic green above and beneath, including the legs, with fiery-red markings upon the clypeus and on each side of the middle of the pronotum, and an oblique median longitudinal stripe upon each elytron, uniting at the apex with a lateral stripe, the middle of the pygidium, and a patch upon the lower face of the hind femur also fiery red.

The body is elongate-oval, very smooth and shining, with fine inconspicuous greyish pubescence at the sides of the metasternum. The clypeus is broad, a little elevated in the middle and rather feebly rugose. The forehead is coarsely punctured. The pronotum is strongly punctured in front, very feebly behind, and rugose at the sides. The front angles are produced and acute, and the hind angles rounded. The scutellum is broad and slightly rugose. There are distinct rows of punctures upon the outer half of the elytra, but these become obsolete upon the inner part, and the apices bear impressed longitudinal lines, but are otherwise almost smooth. The pygidium bears only fine scattered punctures. The middle of the body beneath is very smooth and shining, and the sides are rugosely punctured. The mesosternum forms a short acute process, and the front tibia has a long curved terminal tooth with a vestige of an upper one in the female, obsolete in the male.

Length, 13·5–18 mm.; breadth, 8–10·5 mm.

Assam: Jaintia Hills, Sibsagar (*S. E. Peal*); United Provinces: Ranikhet (*H. G. Champion*), Kusanie, 6000 ft., Kumaon (*H. C.*

Tytler); PUNJAB: Kulu, Palampur (*G. C. Dudgeon*), Simla; NEPAL: Khatmandu; SIKKIM: Kurseong (*Verschraeghen*), Gowchar.

Type in the Oxford University Museum; that of *M. vittata* in the Vienna Museum.

89. Mimela leei.

Scarabæus leei, Swed., Nov. Acta Holm. viii, 1787, p. 180.
Melolontha leei, Oliv., Entom. i, 5, 1789, p. 30, pl. 8, fig. 87.
Melolontha fastuosa, Fabr., Ent. Syst. i, 2, 1792, p. 168; id., Syst. Eleut. ii, 1801, p. 173.
Mimela leei, Hope, Trans. Ent. Soc. Lond. i, 1836, p. 115; Burm., Handb. Ent. iv, 1, 1844, p. 290; Arrow, Trans. Ent. Soc. Lond. 1899, p. 273.
Mimela leei, var. *sapphirina*, Parry, Trans. Ent. Soc. Lond. iv, 1845, p. 85.

Brilliant metallic green, sometimes passing into deep blue (var. *sapphirina*) above and beneath, decorated with fiery-red patches, consisting of the clypeus and forehead, the pronotum, except the circumference and a longitudinal median line, two longitudinal stripes extending from base to apex of each elytron and uniting behind, and two patches (sometimes united) upon the pygidium.

The body is rather broadly ovate, very shining, with a scanty yellowish pubescence at the sides beneath. The clypeus is rather narrow, subquadrate and, with the forehead, strongly and not very closely punctured. The pronotum is strongly and unevenly punctured, smooth along the median line, and coarsely and confluently punctured at the sides; the front angles are very sharp and the hind angles rounded. The scutellum is moderately short and bears a few distinct punctures. The elytra are very strongly and rather evenly punctured, each with a sutural line, a double dorsal line, and several incomplete outer lines of punctures. The pygidium is strongly and irregularly punctured, the metasternum is finely punctured in the middle and strongly and closely at the sides, and the abdomen is strongly punctured, but scantily in the middle. The mesosternal process is very short and not sharp, and the front tibiæ are strongly and acutely bidentate.

♂. The club of the antenna is very long.

Length 15–21 mm.; breadth, 9·5–13 mm.

ASSAM: Khasi Hills.

90. Mimela fulgidivittata.

Mimela fulgidivittata, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 197; Arrow, Trans. Ent. Soc. Lond. 1899, p. 273.

Deep metallic green above and beneath, with the antennæ ferrugineous, and with fiery-red markings as in *M. horsfieldi*, but generally absent from the hind femora.

The body is ovate, finely sculptured above, very shining, with a scanty yellowish pubescence at the sides of the metasternum. The clypeus is rugose, rather convex, rounded and not very wide,

with the margin not strongly reflexed, and the forehead is irregularly punctured. The pronotum is finely and rather evenly punctured, with the sides rugose, the front angles very sharp and produced, and the hind angles a little rounded. The elytra are finely but distinctly punctured all over, except at the apices, most of the punctures forming longitudinal rows. The pygidium is very finely and scantily punctured. The lower surface is very smooth in the middle, the sides of the metasternum are finely rugose, and those of the hind coxæ and abdomen rugosely punctured. The mesosternum is bluntly prominent in the middle, but not produced, and the front tibiæ are bidentate.

♂. The upper tooth of the front tibia is very small.

Length 17–21 mm.; breadth, 10·5–12 mm.

ASSAM: Sylhet; BHUTAN; SIKKIM: Mungphu (*E. T. Atkinson*).

Type in the Paris Museum.

This species is exceedingly like *M. horsfieldi* in appearance, but differs in many structural points, especially in the not produced mesosternum, bidentate front tibiæ, and the evenly punctured pronotum and elytra.

91. Mimela ohausi.

Mimela ohausi, Arrow, Ann. Mag. Nat. Hist. (8) i, 1908, p. 243.

Bright metallic green, very smooth and shining, with a deep blue scutellum and fiery-red patches on the head, each side of the pronotum, the end of the pygidium, the four posterior femora and the sides of the ventral segments, and a discoidal and lateral stripe on each elytron.

It is a small species of elongate-oval shape. The eyes are large and prominent, the clypeus nearly semicircular, closely and finely rugose, the vertex rugosely punctured, the pronotum and scutellum very thinly and minutely punctured, and the former deeply channelled along the middle, with its sides angulated, scarcely curved, the front angles slightly acute and the hind angles well marked but obtuse. The elytra are very lightly punctured, some of the punctures forming double rows. The pygidium has a few moderately strong punctures. The prosternal process is narrow and not very prominent, and the mesosternum is not produced. The front tibia is strongly bidentate.

♀. The apical tooth of the front tibia is longer and blunter, and the club of the antenna rather shorter, than in the male. The only female I have seen is a specimen of a deep violet colour in the collection of Dr. Ohaus.

Length, 14·5 mm.; breadth, 8 mm.

ASSAM (*E. T. Atkinson*); TONKIN; YUNNAN (Ohaus Collection).

Type in the British Museum.

This species very closely resembles *M. horsfieldi*, Hope, in its form, colouring and puncturation, but is generally rather smaller. It is less regularly oval in shape and the prosternal process, mesosternum and front tibiæ are quite differently formed. In

addition, the eyes are larger, the head much more strongly sculptured, the pronotum has a deep median groove, and its sides are more convex and not strongly punctured.

92. Mimela vittaticollis.

Mimela vittaticollis, Burm., Handb. Ent. iv, 2, 1855, p. 506.

Testaceous yellow above and beneath, including the legs, and everywhere suffused with a slight metallic green lustre, which is less apparent upon the lower surface, decorated with dark green markings consisting of a patch on each side of the vertex of the head, a broad stripe on each side of the pronotum not reaching the lateral margins, an external border to each elytron from shoulder to apex, narrow at the hind margin, and a rather vague patch upon the region of the elytra adjoining the scutellum.

The body is ovate, not highly convex, closely punctured, and moderately shining above. The head is rather small, with the clypeus rugose and the forehead irregularly punctured. The pronotum is rather evenly punctured, there is a longitudinal groove at the middle, and the sides are scarcely curved, obtusely angulated at the middle and straight behind, with the posterior angles sharp. The scutellum is punctured, and the elytra are strongly and densely punctured, each having a punctured sutural stria and three double lines of punctures rather far apart, the innermost pair becoming deeply impressed at the extremity. The pygidium is moderately and rather evenly punctured. The sides of the metasternum are densely punctured and thinly clothed with yellow pubescence. The abdomen is sparingly punctured. The mesosternum is pointed, but not at all produced. The legs are moderately slender, the front tibiæ bidentate.

♂. The antennal club is nearly as long as the footstalk.

Length, 16–18 mm.; breadth, 9–11 mm.

Nepal (type); Sikkim: Kurseong, 5000 ft. (*N. Annandale*, May–July), Darjiling (*H. Fruhstorfer*, June), Lebong (*H. Maxwell Lefroy*), Soom, 4000–5000 ft. (*F. H. Gravely*, June); Bhutan: Maria Basti (*L. Durel*); Assam: Khasi Hills.

Type in M. René Oberthür's collection.

93. Mimela subsericea.

Mimela subsericea, Arrow, Ann. Mag. Nat. Hist. (8) i, 1908, p. 245.

Bright metallic green, with the lower surface and legs golden green, and the tarsi more or less fiery copper-coloured.

The body is broadly oval, the legs short and stout, and the whole upper surface is very strongly and densely punctured, but moderately shining. The punctures are confluent on the clypeus and at the sides of the head and pronotum. The clypeus is broad, the eyes small and far apart. The lateral margins of the pronotum are evenly rounded, the front angles acute, the hind angles

very obtuse, and there is a very narrow incomplete smooth line in the middle of the disk. There is a straight line of punctures on each side of the elytral suture, leaving a quite smooth inner margin to each elytron, and slight traces of three or four other smooth longitudinal lines upon each. The pygidium is strongly but less densely punctured. The prosternal process is rather broad, the mesosternal process pointed but not produced, and the front tibia has a very long blunt terminal tooth and a slight upper tooth.

Length, 14–15 mm.; breadth, 8–9 mm.

ASSAM: Naga Hills (*W. Doherty*); BURMA: Ruby Mines (*W. Doherty*), Mandalay (*E. T. Atkinson*).

Type in the British Museum; co-type in Dr. Ohaus' collection.

This species is nearly allied to the succeeding one (*M. soror*), but smaller and more densely punctured, except upon the pygidium, which is smoother and more shining. The mesosternum is not distinctly produced as in that species, and the hind angles of the pronotum are much more rounded.

94. Mimela soror.

Mimela soror, Arrow, Ann. Mag. Nat. Hist. (8) i, 1908, p. 245.

This species is metallic green above and the antennæ, legs and lower surface are ferrugineous and more or less suffused with green. A small pale patch is vaguely traceable on each side of the pygidium in certain lights.

The form is oval and convex. The clypeus is broadly rounded and coarsely rugose, the eyes small and the forehead strongly punctured; the pronotum is closely and coarsely punctured, and densely and rugosely at the sides, with the lateral margins strongly rounded, the front angles acute and the hind angles obtuse. The scutellum is very minutely, and the elytra strongly, densely and irregularly punctured, leaving only a narrow smooth sutural strip and slight vestiges of two or three others upon each. The pygidium is strongly and thickly punctured, the punctures becoming confluent at the sides, and the lower surface of the body is smooth in the middle and rugose and hairy at the sides. The mesosternal process is sharp but very short, and the front tibia (of the female) has a long blunt terminal tooth and a rather feeble upper one.

The male is not known.

Length, 19–20 mm.; breadth, 10·5–11·5 mm.

ASSAM: Manipur (*W. Doherty*).

Type in the British Museum.

It is closely allied to *M. chrysoprasa*, Hope, of Borneo and the Malay Peninsula, but rather smaller, with the pronotum a little less strongly punctured, the scutellum more minutely, the pygidium punctured instead of finely granulated, and the femora and tibiæ of a darker shade.

95. **Mimela terminalis**, sp. nov.

Deep green, with a metallic lustre, which is almost absent from the elytra, except at the margins, and with the clypeus, sides of the prothorax, extremity of the pygidium and the abdomen golden yellow, and the legs reddish yellow with the external edge of the tibiæ green.

It is rather short and broad, with the widest part towards the extremity of the elytra. The clypeus is broad, nearly straight in front and closely rugose, and the forehead and vertex are very strongly and densely punctured. The pronotum is strongly and closely punctured, rather rugosely at the sides, with an imperfect smooth median line. The front angles are acutely produced, the hind angles blunt, and the base strongly trisinuate. The scutellum is finely punctured. The elytra are closely and very coarsely punctured, except in the anterior sutural part, where the punctures are much finer. The pygidium is very densely and rugosely punctured, especially at the sides, where it is broadly impressed. The mesosternum is produced into a short sharp process, and the metasternum is smooth in the middle and densely punctured and thinly clothed with tawny hair at the sides. The front tibia is bidentate, the upper tooth rather feeble.

♂. The terminal tooth of the front tibia is short and sharp and the inner front claw dilated.

♀. The terminal tooth of the front tibia is long and blunt.

Length, 22 mm.; breadth, 12 mm.

Burma: Karen Hills, 2900–3500 ft. (*L. Fea*, Dec.).

Type in the Genoa Museum; co-type in the British Museum.

This resembles *M. chrysoprasa*, Hope, but differs from it in the scarcely metallic elytra, with their feebler discoidal punctuation, the pale clypeus, sides of the thorax and extremity of the pygidium, and the broad depressed form of the latter.

96. **Mimela princeps.**

Mimela princeps, Hope, Trans. Ent. Soc. Lond. iii, 1842, p. 65; Burm., Handb. Ent. iv, 1, 1844, p. 542.

Mimela pachygastra, Burm.,* Handb. Ent. iv, 2, 1855, p. 507 (n. syn.).

Deep shining golden green, with the lower surface, femora and tibiæ yellow; the extremities of the tibiæ, the tarsi and sometimes the abdomen brown. There is an inconspicuous narrow yellow stripe at each lateral margin of the pronotum and a similar marginal stripe at the apex of the pygidium.

The body is shortly ovate, with the greatest width close to the posterior end. The head is large, strongly and closely punctured, with the clypeus rather small and rugose. The pronotum is closely punctured, confluently at the sides, with an incomplete smooth median line; the front angles are sharply produced and the hind angles rounded. The elytra are strongly,

closely and rather irregularly punctured, with four or five imperfect double longitudinal series of punctures. The pygidium is strongly but not closely punctured, the metasternum densely punctured and very finely pubescent, and the abdomen punctured at the sides. The mesosternal process is very short and triangular and the front tibia is sharply bidentate.

♀. The extremity of the front tibia is long and spatulate.

Length, 25 mm.; breadth, 15 mm.

N. BENGAL: Siliguri (July—Indian Mus.); SIKKIM: Kurseong, 5000 ft. (*Verschraeghen*, *Fruhstorfer*), Gopaldhara, Rungbong Valley (*H. Stevens*); BHUTAN (*Capt. Pemberton*); ASSAM: Khasi Hills (Berlin Entom. Museum), Cachar (*J. Wood-Mason*); TONKIN (*R. V. de Salvaza*).

Type (Solly Coll.) unknown.

97. Mimela lævigata.

Mimela lævigata, Arrow, Ann. Mag. Nat. Hist. (8) i, 1908, p. 242.

Entirely bright metallic green, with the upper surface rather more golden green and the extreme edge of the elytral suture violet.

It is of elongate-oval form, smooth and shining, and almost devoid of hairy clothing. The eyes are small and far apart, the vertex of the head is finely and sparingly punctured, the clypeus and forehead rather rugosely. The pronotum is scarcely visibly punctured on its disk, but strongly and confluently at the sides, which are gently rounded, the front angles acute, the hind angles obtuse, and the base distinctly lobed in the middle. The scutellum is short and smooth. The elytra are almost without punctures on the inner half, but very strongly and irregularly punctured on the outer half. The pygidium is very smooth, only exhibiting a few punctures near its circumference. The prosternal process is broad and triangular at the summit, and the mesosternal process is moderately long but rather blunt. The metasternum is smooth in the middle, coarsely and confluently punctured at the sides. The front tibiæ are without a lateral tooth in either sex.

♂. The club of the antenna is rather long.

Length, 21–22 mm.; breadth, 12 mm.

BENGAL: Raniganj (*A. Martin*); SIKKIM: Mungphu (*E. T. Atkinson*); ASSAM: Kurseong (*Verschraeghen*), Tejpur (*Desenne*—Pusa Coll.).

Type in the British Museum.

98. Mimela viridipes, sp. nov.

Deep metallic green above, including the tibiæ and tarsi, with the lower surface and femora reddish, suffused with a metallic green lustre.

It is shortly oval in shape, very convex, smooth and shining, with a very thin clothing of short yellowish hair at the sides of the body beneath. The head is large, with the eyes small

and not prominent, as seen from above. The clypeus is short, broadly rounded and rugosely punctured, and the forehead bears fine irregularly scattered punctures. The pronotum is thinly and minutely punctured, with the sides gently rounded, the front angles acutely produced, the hind angles very obtuse, and the base gently rounded. The scutellum is grooved on each side near the edge and bears a few scattered minute punctures. The elytra have a juxta-sutural and two pairs of dorsal lines of rather strong punctures, the three innermost lines very deeply impressed at the posterior end, and the intervening spaces are wide and irregularly punctured. The pygidium is finely and sparingly punctured. The mesosternum is not produced. The metasternum is smooth in the middle and rugosely punctured at the sides. The legs are moderately long, the front tibia bidentate, the hind tibia inflated before the middle and not much dilated at the extremity.

I know only the male.

Length, 15·5 mm.; breadth, 9·5 mm.

ASSAM: Sylhet.

Type in the British Museum.

The only other specimen I have seen is in the Paris Museum, where it appears to have been confused by Blanchard with *M. heterochropus*, when drawing up the description of that species.

99. Mimela heterochropus.

Mimela heterochropus, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 196.

Mimela hopei, Burm., Handb. Ent. iv, 2, 1855, p. 507.

Mimela splendens, Hope * (nec Gyll.), Trans. Ent. Soc. Lond. i, 1836, p. 114.

Brilliant dark metallic green, with the femora and tibiæ orange-red and the tarsi nearly black.

The body is shortly ovate, with the greatest width considerably behind the middle, very smooth and shining, and with a soft erect pubescence at the sides of the metasternum. The clypeus is finely but rather rugosely punctured, moderately short and broad, with the margin broadly rounded at the sides and almost straight in front. The forehead is finely and irregularly punctured, with the eyes small and wide apart, but moderately prominent. The pronotum bears fine and rather scattered punctures; its front angles are acute, and the hind angles distinct but not sharp. The scutellum is broad and feebly punctured; the disk of each elytron bears two or three paired series of punctures, rather fine anteriorly, but becoming deeply sulcate towards the extremities, and there is an irregularly punctured space on each side. The pygidium is lightly striolated in the male and roughly punctured in the female. The metasternum is smooth and broadly channelled in the middle and densely punctured and pubescent at the sides. The abdomen

bears scattered punctures and hairs. The mesosternum is not produced. The front tibia has a very slight lateral tooth, the hind tibia is rather stout, and the two branches of the inner front tarsal claw are very divergent.

♂. The club of the antenna is long, the inner branch of the inner front tarsal claw is much dilated, and the pygidium is much less strongly sculptured than in the female.

Length, 16–18 mm.; breadth, 9·5–10 mm.

NEPAL (*Hardwicke*—type); SIKKIM: Ging Lebong, 4500 ft. (*F. M. Howlett*, June), Mungphu (*E. T. Atkinson*), Kurseong, 5000 ft., Gopaldhara, Rungbong Valley (*H. Stevens*); BHUTAN; N. BENGAL: Siliguri (July); ASSAM: Naga Hills (*W. Doherty*); BURMA: Momeit (*W. Doherty*), Dawna Hills, 2000 ft. (*Col. C. T. Bingham*, Oct.); TONKIN (*R. V. de Salvaza*).

Type in the Paris Museum; that of *M. splendens*, Hope, in the British Museum.

I have found three species mixed together under this name in the Paris Museum, viz., the present species, *M. splendens*, Gyll., and *M. viridipes*, and it is possible that Blanchard actually drew up his description from all three; but as that description applies best on the whole to this insect, it will not be disputed, I think, that his name should be bestowed upon it.

100. Mimela atkinsoni.

Mimela atkinsoni, Arrow, Ann. Mag. Nat. Hist. (8) i, 1908, p. 244.

Very shining deep metallic olive-green above and below, except the antennæ, which are deep red.

The form is oval, convex and rather globular, with the head relatively rather large, the legs short, the hind legs very thick and the femora strongly arched. The clypeus is strongly and almost rugosely, the forehead and prothorax rather finely and moderately closely, punctured (but a little less closely at the sides and base of the latter), the scutellum very sparingly. The lateral margins of the pronotum are gently rounded, the front angles acute and the hind angles rounded off. The elytra are minutely punctured in nearly regular longitudinal lines, the innermost of which are strongly impressed at the posterior margins. The pygidium is rather deeply but not closely punctured, the lower surface of the body almost smooth. The prosternal process is large and the mesosternum not produced. The front tibia is bidentate.

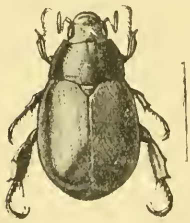

Fig. 26.—*Mimela atkinsoni*.

The upper tooth of the front tibia is minute and obtuse in the male and rather stronger in the female.

In the type specimen the outer margins of the elytra have a rosy tint, which I have not seen in others.

Length, 13 mm.; breadth, 8 mm.

BURMA: Pegu (*E. T. Atkinson*), Tavoy.

Type in the British Museum; co-type in Dr. Ohaus' collection.

101. Mimela rugicauda, sp. n.

Deep non-metallic apple-green, with the pygidium slightly metallic and the lower surface and legs deep coppery red.

Elongate-oval, very convex, smooth and shining, with only a very thin and inconspicuous clothing of hair at the sides of the body beneath and upon the pygidium. The head is not very large and is rather scantily but not very finely punctured; the eyes are moderately prominent. The pronotum is very finely and sparingly punctured, with the sides gently rounded, all the angles nearly right angles, but the hind ones a little more obtuse, and the base rather strongly lobed. The scutellum is almost unpunctured. The elytra are very minutely and thinly punctured in the anterior part, coarsely and rugosely in the posterior part, with slight indications of impressed longitudinal lines. The pygidium is very minutely and densely granulated, with a very fine, scanty and inconspicuous clothing of hairs. The mesosternum is produced into a long acute process. The front tibia is bidentate and the hind tibia is slightly dilated from base to apex.

♀. The terminal tooth of the front tibia is very long and blunt, and the upper tooth very small.

Length, 18 mm.; breadth, 10 mm.

SIKKIM: Kurseong, 6000 ft. (*E. A. D'Abreu*).

Type in the British Museum.

I have only seen a single female, presented by Mr. D'Abreu.

102. Mimela amabilis.

Mimela amabilis, Arrow, Ann. Mag. Nat. Hist. (8) i, 1908, p. 242.

Deep green, very smooth and shining, with the legs and lower surface metallic and the upper surface non-metallic, but with a very faint rosy reflection generally visible at least in the anterior part.

Very short, compact and convex, and only thinly clothed with short hair at the sides of the metasternum. The head is large, the eyes small, the clypeus broadly rounded and finely but rather rugosely punctured. The forehead and pronotum are finely and moderately closely punctured, the latter strongly and densely at the sides; the lateral margins are gently rounded, the front angles acute, the hind angles rounded, and the base strongly trisinuated. The scutellum is very short, but distinctly angulated, and bears extremely minute punctures. The elytra are lightly, minutely and thinly punctured in rows, the punctures on

the subsutural interval being irregular. The pygidium is finely punctured, a little more strongly at the sides. The mesosternum is not produced in front of the coxæ.

♂. The front tibia has a rather long blunt apical tooth, but only a vestige of a lateral one.

♀. The front tibia is distinctly bidentate.

Length, 15–16 mm.; breadth, 9·5 mm.

BURMA: Karen Hills (*L. Fea*); SIAM: Renong (*W. Doherty*).

Type in the British Museum.

This species is very closely related to *M. glabra*, Hope, but that is almost entirely devoid of puncturation upon the upper surface.

103. Mimela glabra.

Mimela glabra, Hope,* Trans. Ent. Soc. Lond. iii, 1842, p. 67; Burm., Handb. Ent. iv, 1, 1844, p. 543.
Mimela downesi, Hope,* Proc. Ent. Soc. Lond. 1842, p. 60; id., Ann. Mag. Nat. Hist. xi, 1843, p. 62.

Dark olivaceous non-metallic green above, with the lower surface and legs metallic, and more brilliant green, very smooth and almost unpunctured above, and thinly clothed with rather coarse yellow hair at the sides of the metasternum.

The body is small, shortly ovate and very convex. The clypeus is short, broad, rounded in front and, with the forehead, bears a few scattered indistinct punctures. The pronotum has a few punctures near the front angles, which are very sharp; other punctures present are extremely fine and inconspicuous. The scutellum is very short and obtuse and unpunctured, like the elytra. The pygidium bears a few fine scattered punctures; the metasternum is very smooth in the middle and densely punctured at the sides; and the abdomen is coarsely punctured laterally, each segment with a single row of punctures from side to side. The mesosternum is not produced, and the front tibia is sharply toothed at the end, but without an upper tooth.

♂. The club of the antenna is as long as the footstalk, and the apex of the front tibia is very sharp and strongly curved.

Length, 12–16 mm.; breadth, 7–9 mm.

ASSAM: Khasi Hills (*E. T. Atkinson, Sir Joseph Hooker, Col. Godwin-Austen*), Shillong.

Type in the Oxford University Museum; that of *M. downesi* in the British Museum.

Both types were specimens taken by Dr. Cantor, the second name being given to one inaccurately labelled "China."

104. Mimela dehaani.

Euchlora dehaani, Hope,* Ann. Nat. Hist. iv, 1840, p. 349.
Mimela decipiens, Hope,* Trans. Ent. Soc. Lond. iii, 1841, p. 66.

Very deep pea-green above, including the pygidium, and the lower surface and legs of a uniform dark metallic green.

The body is elongate-oval in shape and not very convex. It is exceedingly smooth, the upper surface scarcely punctured, the sides of the metasternum alone clothed with a fine greyish pubescence. The head is very finely punctured; the clypeus feebly punctate-rugose. The pronotum, scutellum and elytra are not perceptibly punctured, except at the sides of the first, and the pygidium is very lightly punctured, scarcely at all in the middle. The mesosternal process is short and triangular, but rather sharp. The metasternum is densely punctured at the sides and smooth in the middle, and the abdomen feebly punctured at the sides. The legs are moderately stout and the front tibia bears a feeble upper tooth in the female, absent in the male. In the latter the club of the antenna is rather long.

Length, 19–25 mm.; breadth, 12–14 mm.

ASSAM: Khasi Hills, 1000–3000 ft. (*H. Maxwell Lefroy*), Cherrapunji (*B. Warren*, May); BHUTAN (*Capt. Pemberton*); SIKKIM: Darjiling (*Fruhstorfer*, March and April).

Types in the Oxford Museum.

105. Mimela marginalis.

Mimela marginalis, Arrow, Ann. Mag. Nat. Hist. (8) i, 1908, p. 242.

Deep non-metallic green, with the antennæ, clypeus, legs, the hind margins of the propygidium and pygidium, the outer margins of the pronotum and elytra, and usually the extremity of the abdomen beneath, testaceous, more or less suffused with metallic green; the outer edges of the tibiæ and the tarsi dark coppery green.

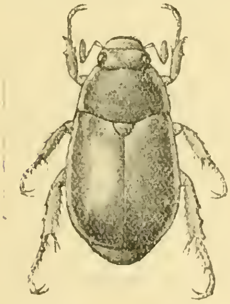

Fig. 27.—*Mimela marginalis.*

The body is oval, very smooth, very lightly punctured above, and thinly clothed at the sides beneath with greyish hair. The head is large, the eyes small and far apart; the clypeus is broad and finely rugose, the vertex, pronotum and scutellum minutely and sparingly punctured. The sides of the pronotum are gently rounded, the front angles acute, the hind angles well marked but not sharp. The elytra are finely and rather irregularly punctured, with a complete line of punctures upon each adjoining the suture and a few other imperfect lines. The pygidium is rather more coarsely, but not deeply, punctured. The antennæ are long, the mesosternal process is short, but rather slender and acute, and the front tibiæ are bidentate, the apical tooth being blunt and long, and the lateral one short and rather sharp. The inner claw of the front tarsus is rather widely cleft.

♀. The terminal tooth of the front tibia is very long.

Length, 19–23 mm.; breadth, 12–13 mm.

Bhutan; Sikkim: Mungphu (*E. T. Atkinson*), Darjiling (*Verschraeghen*), Birch Hill, 6000–7000 ft. (June), Pashok, 2800 ft. (Sept.), Kurseong, 5000 ft. (Indian Mus.), Gangtok, 6150 ft. (Sept.—Indian Mus.), Shamdang, 3000 ft. (Sept.—Indian Mus.); Madras: Mercara, Coorg (Pusa Coll.).

Type in the British Museum.

106. Mimela mundissima.

Mimela mundissima, Walker, Ann. Mag. Nat. Hist. (3) iv, 1859, p. 220.

Testaceous beneath, including the femora, and grass-green above, sometimes with a very faint pinkish flush, and margined with a sharply-defined narrow yellow band completely surrounding the dorsal surface, the clypeus and sometimes the pygidium being yellow, with a greenish suffusion, and the tibiæ and tarsi coppery red.

The body is broadly ovate, with its greatest width near the hinder extremity, not very convex, and very smooth and shining above. The head is finely punctured, the clypeus short, broadly rounded and rather rugosely punctured, the pronotum finely, evenly, but more thinly at the sides. The scutellum is very short and blunt, and punctured in the middle. The elytra are irregularly and a little more coarsely punctured, with slight traces of longitudinal lines. The pygidium is moderately strongly and closely punctured. The metasternum is closely punctured at the sides and clothed with pale yellow pubescence. The abdomen is sparsely punctured. The mesosternum is not produced. The front tibia is bidentate.

♂. The upper tooth of the front tibia is indistinct.

Length, 13–19 mm.; breadth, 8·5–11 mm.

Ceylon: Maskeliya (*E. E. Green*, March–April), Dikoya, 3800–4200 ft. (*G. Lewis*, Dec.–Feb.), Uda Point (*T. Bainbrigge Fletcher*, Sept.), Kelani Valley, nr. Colombo (*W. Braine*), Kandy.

Type unknown.

The types of this and seven other Coleoptera described at the same time by Walker in an Appendix to his paper do not seem to have been in the British Museum, and cannot be traced; but, unlike the other species, there appears to be no reasonable doubt as to the identity of *Mimela mundissima*.

107. Mimela xanthorrhina.

Mimela xanthorrhina, Hope,* Coleopterist's Manual, i, 1837, p. 120; Burm., Handb. Ent. iv, 1, 1844, p. 541.

Lower surface, legs and antennæ testaceous, with a very faint metallic green lustre, upper surface light grass-green, with reddish-yellow reflections, the clypeus paler, the sides of the pronotum and elytra narrowly and not very sharply bordered with yellow, and the end of the pygidium indefinitely yellow.

The body is ovate, very convex and shining. The clypeus is short, broadly rounded and moderately punctured. The forehead and pronotum are very finely punctured, the latter more scantily at the sides. The scutellum is short and scantily punctured. The elytra are rather strongly and closely punctured, and have four double longitudinal rows of punctures, which become deeply sulcate towards the posterior end. The pygidium is moderately punctured. The metasternum is closely punctured at the sides and clothed with short tawny hair, and the abdomen is rather coarsely punctured at the sides. The mesosternum is not produced and the front tibia is bidentate.

♂. The club of the antenna is rather long.

Length, 15–17 mm.; breadth, 9–9·5 mm.

MADRAS: Anamalai Hills (4700 ft.), Nilgiri Hills (*Sir G. F. Hampson*), Coonoor, 6000 ft. (*Capt. Sewell*, June), Travancore (*J. Castets*, Sept.).

Type in the Oxford Museum.

M. xanthorrhina has considerable resemblance to *M. mundissima*, but it is distinguishable by its pale quasi-translucent colour and the yellow elytral border, which is less sharply defined, especially behind.

108. **Mimela aurelia**, sp. nov.

Golden, with green and pink reflections, the clypeus rather more green, and the abdomen and tarsi more or less brown.

The body is short and ovate, rather broad behind, and very smooth and shining. The head is large, the clypeus broadly semicircular and finely and densely rugose, the forehead finely and closely punctured. The pronotum is rather short, finely punctured (but more strongly and closely at the sides), with the front angles acutely produced, the sides strongly rounded behind and the hind angles obsolete. The elytra are moderately strongly and evenly punctured, with three double rows of regular punctures on the disk. The pygidium is finely and scantily punctured. The mesosternum is not produced, the metasternum is rugulose and thinly clothed with fine pale hair at the sides, and the abdomen is bare and shining. The front tibia is armed with two strong teeth, and the hind tibia is inflated before the middle and rather narrow at the extremity.

♂. The inner front claw is strongly bent, broad and widely cleft.

Length, 21 mm.; breadth, 12 mm.

BURMA: on the Siamese border (*K. G. Gairdner*).

Type in the British Museum.

I have seen only a single specimen.

This species greatly resembles the Chinese *M. testaceoviridis*, Bl., but is rather larger, with the puncturing of the elytra a little less coarse and the hind angles of the prothorax rounded off.

109. Mimela inscripta.

Anomala inscripta, Nonfr., Berl. Ent. Zeits. xxxvi, 1892, p. 236.
Mimela crocea, Ohaus,* Deutsche Ent. Zeits. 1902, p. 55.
Mimela coxalis, Ohaus,* l. c. p. 54.

Straw-coloured, with a slight pinkish flush (sometimes becoming slightly metallic), the clypeus and tarsi fiery crimson. There is a round spot on each side of the forehead of a reddish mahogany colour and an **M**-shaped mark (sometimes interrupted in the middle) upon the pronotum. The larger part of the lower surface of the body, a large patch upon each of the middle and hind femora, and the hind tibiæ are crimson or mahogany-red. In some cases streaks of this colour appear also upon the elytra, or they may be entirely suffused with it.

The body is oval, very convex, and very smooth and shining. The clypeus is straight in front, subquadrate, not broad, rather closely punctured; the forehead finely and irregularly punctured. The pronotum is lightly punctured in the middle and very smooth at the sides, all the angles being distinct but not sharp. The scutellum is nearly equal-sided and scarcely punctured. The elytra are very lightly and scantily punctured, some of the discoidal punctures forming longitudinal rows, which become deeply impressed behind. The pygidium is pointed and a little inflexed at the apex beneath and bears fine scattered punctures. The metasternum is smooth in the middle and closely punctured at the sides, where there is a very thin pubescence. The abdomen bears a few punctures. The mesosternum is rather sharply pointed and minutely produced. The legs are short and stout, and the front tibia unidentate, the upper tooth being represented only by a slight sinuation of the outer edge; the hind femur is extremely short and rounded, with the posterior edge distinctly emarginate.

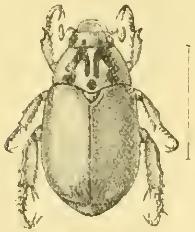

Fig. 28.—*Mimela inscripta.*

A specimen from Siam in the British Museum is entirely deep blood-red, except the sides of the pronotum, the middle of the scutellum and a patch on each hind femur, which are cream-coloured, the pale sides of the pronotum each bearing a small red spot.

♂. Rather shorter in form than the female, and with the club of the antenna rather long.

Length, 12–21 mm.; breadth, 7–11 mm.

Bengal: Ranchi (*W. H. Irvine*), Barway (*Père Cardon*—Berlin Ent. Mus.), Chota Nagpur, Nowatoli (*Père Cardon*, Aug. & Sept.—Paris Museum); Burma: Tavoy; Siam; Tonkin: Pak-Lay (*R. V. de Salvaza*); Perak.

Types of *M. inscripta*, *crocea* and *coxalis* in Dr. Ohaus' collection.

Probably this species will prove to be very widely distributed. It varies remarkably in size, but is rather constant in its curious pattern. The beautiful metallic crimson suffusion is probably always present in the living insect, but is not always persistent.

110. Mimela bicolor.

Mimela bicolor, Hope,* Trans. Ent. Soc. Lond. i, 1836, p. 116; Burm., Handb. Ent. iv, 1, 1844, p. 542.
Mimela similis, Hope,* l. c.

Upper surface and pygidium pinkish yellow or red, with the head and the sides of the pronotum bright metallic-red, and the legs aud lower surface (except the prothorax beneath) generally entirely greenish or bluish black, but less frequently pale, except the middle of the metasternum, base of the abdomen, and the tarsi.

It is a small, short, ovate species, very smooth and shining, and almost devoid of hair, the sides of the metasternum only bearing fine and scanty greyish pubescence. The head is scantily punctured, the clypeus broad and rugosely punctured, with its extreme margin green. The pronotum is very finely and inconspicuously punctured, very short, with its sides strongly narrowed towards the front, and the front angles acute. The scutellum is broad and very slightly punctured. The elytra bear longitudinal rows of very fine punctures, the interval between the 1st and 2nd rows being broad and irregularly punctured. The pygidium is very smooth and sparingly punctured, and the lower surface very smooth and shining in the middle and finely and fairly closely punctured at the sides. The mesosternum is not produced, but forms a minute sharp tubercle in front. The legs are not long, and the front tibia forms a long sharp terminal tooth, the upper tooth being scarcely perceptible.

♂. The antennal club is rather long.

Length, 12–14 mm.; breadth, 8–9 mm.

Sikkim: Kurseong, 6000 ft. (*E. A. D'Abreu*, *Verschraeghen*); Nepal (types); Assam (*W. F. Badgley*), Pedong (*A. Desgodins*).

Types in the British Museum.

The colouring, although variable, is very distinctive and peculiar, and the outline also is very inconstant, some (male) specimens being extremely short relatively. The variability of the colouring of the upper surface is perhaps due to a darkening of the delicate rosy-yellow tint after death, but in fresh specimens the elytra are rather lighter than the rest of the upper surface.

111. Mimela cyanipes.

Paracrusis cyanipes, Newm., Mag. Nat. Hist. iii, 1839, p. 366; Hope, Trans. Linn. Soc. xviii, p. 597, pl. 40, fig. 5.
Mimela cyanipes, Burm., Handb. Ent. iv, 1, 1844, p. 289.
Mimela globosa, Ohaus, Deutsche Ent. Zeits. 1905, p. 88.

Bright red above and beneath, with a slight metallic lustre,

the club of the antenna dark, and the tibiæ and tarsi metallic blue-black.

It is very shortly oval and convex, almost globular in shape, very smooth and shining and almost devoid of hair, and the legs, especially the hind ones, are short and stout. The clypeus is rather broad, nearly straight in front, rounded at the sides, and moderately closely punctured. The eyes are rather small and remote, and the forehead is finely punctured. The pronotum is very short, strongly narrowed in front, finely but distinctly punctured, with the sides gently rounded, the front angles acute and the hind angles very blunt. The scutellum is small and finely punctured, and the elytra bear faint longitudinal lines of minute punctures. The pygidium and the sides of the metasternum are finely and moderately closely punctured, and the mesosternum is not produced. The front tibia bears only a single long and curved terminal tooth, and the hind femur, tibia and tarsus are very short and broad.

There is a single female specimen in the British Museum.

Length, 12·5–13 mm.; breadth, 8·5–9 mm.

ASSAM (type): BURMA: Mergui (*E. T. Atkinson*); TONKIN: Hagiang (*R. V. de Salvaza*, May).

The type ("in Mr. Solly's collection") cannot be traced, but the specimen in the British Museum, from which the above description has been made, agrees well with Westwood's drawings of it. Hope and, following him, Burmeister, have described the head as black, but this is from a careless reading of Newman's "capitulo nigro," referring to the club of the antenna.

M. globosa, Ohaus, is apparently this species, and the *M. cyanipes* with which he has compared it, and which he describes as having bidentate front tibiæ, is probably *M. bicolor*. Ohaus' type is said to be more strongly punctured than the other species, but in this respect *M. bicolor* is remarkably inconstant and *M. cyanipes* may be the same.

Genus **ANOMALA**.

Anomala, Samouelle, The Entomologist's Useful Companion, 1819, p. 191; Burm., Handb. Ent. iv, 1, 1844, p. 230; Lacordaire, Gen. Col. iii, 1856, p. 328.

Euchlora, Macleay, Horæ Ent., part 1, 1819, p. 147.—Type, *Melolontha viridis*, F.

Phyllopertha, Stephens, Ill. Brit. Ent., Mandib. iii, 1830, p. 223.—Type, *Scarabæus horticola*, L. (n. syn.).

Rhombonyx, Hope, Coleopt. Man. i, 1837, p. 106.—Type, *Melolontha holosericea*, F.

Aprosterna, Hope, Trans. Ent. Soc. Lond. i, 1835, p. 117.—Type, *Mimela nigricans*, Kirby.

Idiocnema, Falderman, Mém. Acad. Pétersb. ii, 1835, p. 378.—Type, *I. sulcipennis*, Fald.

Rhinoplia, Burmeister, Handb. Ent. iv, 1, 1844, p. 232.—Type, *Melolontha dorsalis*, F.

Heteroplia, id., l. c. p. 233.—Type, *M. elata*, F.

Spilota, id., l. c., p. 266.—Type, *M. marginata*, F.

Callistethus, Blanchard, Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 189.—Type, *Mimela auronitens*, Hope.
Singhala, id., l. c.—Type, *S. tenella*, Bl. (n. syn.).
Adoretosoma, id., l. c. p. 234.—Type, *A. elegans*, Bl
Phylloperthma, Motschulsky, Bull. Soc. Ent. Mosc. ii, 1863, p. 468. —Type, *Singhala tenella*, Bl. (n. syn.).
Pseudosinghala, Heller, Deutsche Ent. Zeits. 1891, p. 294.—Type, *P. vorstmanni*, Hell. (n. syn.).
Hadropopillia, Kraatz, Deutsche Ent. Zeits. 1892, p. 289.—Type, *Popillia regina*, Newm.
Pœcilosticta, id., l. c. p. 290.—Type, *Mimela variegata*, Walk.
Ischnopopillia, id., l. c. p. 292.—Type, *Popillia exarata*, Fairm.
Euchrysinda, Reitt., Verh. Ver. Brunn. xli, 1903, p. 80.—Type, *Phyllopertha chinensis*, Redt. (n. syn.).
Blitopertha, id., l. c. p. 85.—Type, *Melolontha lineata*, F. (n. syn.).
Spileuchlora, Ohaus, Deutsche Ent. Zeits. 1903, p. 209.—Type, *S. waterstraadti*, Oh. (n. syn.).
Spinanomala, id., Ann. Soc. Ent. Belg. liv, 1910, p. 213.—Type, *S. unispinosa*, Oh.
Paraspilota, Bates, Proc. Zool. Soc. 1888, p. 374.—Type, *P. impicta*, Bates.

Type, *Melolontha ænea*, De G.

Range. Almost universal, but not found in Madagascar, Australia (except the widely-dispersed *Anomala antiqua*), New Zealand, or S. America west of the Andes.

Form extremely variable, sometimes short and globose, sometimes very long and narrow, with stout, moderate or very long and slender legs. The surface may be extremely smooth and shining, or strongly sculptured and opaque, and sometimes entirely clothed with hair. The membranous external fringe of the elytra is always distinct and in some species considerably developed. The clypeus is transverse, rounded or straight in front, rarely at all excised and never produced or rostriform. The eyes are prominent and sometimes very large. The prothorax is transverse, generally slightly lobed and never excised in front of the scutellum, and with or without a complete marginal stria at the base. The prosternum is not, or only very little, elevated behind the front coxæ; in a few species (e. g. *A. anopunctata* and *ænigma*) it forms a small acute vertical process, but is not bent forward between the front coxæ as in the genus *Mimela*. The mesosternum is most commonly not produced between the middle coxæ, but occasionally forms a process of varying shape, sometimes very short and rounded (*A. ebena*), sometimes slender and sharply pointed. The legs are very variable in development; the front tibia is armed with one, two, or three teeth and bears a single spur at the base of the tarsus; the middle and hind tibiæ may be long or short, but are generally spinose externally, and each bears two terminal spurs; the tarsi are generally moderately long, the claws always entire upon the hind feet, the longer one of the front feet, or of the front and middle feet, cleft, or all entire. The labrum is bilobed, not prominent, horizontal in position and not presenting a face at right angles to the clypeus.

The mandible is short and rounded, concealed when in repose, produced into several teeth at the tip, and bears a large, strongly-ridged, molar surface at the base. The maxilla is short and strong, generally bearing five sharp and nearly equal teeth, one of them terminal, the others in pairs behind, and all parallel. The palpi are 4-jointed, the last joint long. The mentum is approximately quadrate, feebly bilobed in front, with short, 3-jointed palpi.

The apical tooth of the front tibia is usually shorter and sharper in the male than in the female, and the inner front claw more or less dilated. The club of the antenna is sometimes very long in the male, and the eyes may also be enlarged. Sexual differences are also found in different species in the coloration, sculpture of the elytra or pygidium, the hairy clothing of the latter, the form of the clypeus, margins of the elytra, spurs of the hind tibia, and other features. These have been referred to more fully in the introduction to this volume.

In classifying the species of *Anomala* I have regarded as of primary importance a feature to which little attention has been paid hitherto, viz., the presence or absence of a complete marginal stria at the base of the pronotum. This is found in all those forms which may be regarded as the more primitive types of *Anomala*, but has disappeared from the more characteristically Oriental *viridis* and *grandis* group and the species allied to it. In this section the claws are all of one type (the longer front and middle claws cleft), but in the section with a complete marginal stria a great diversity of claw-structure occurs. Though undoubtedly important, the marginal stria cannot be treated as of generic value, for the members of the *testacea* and *agilis* groups which are separated by this character approach each other very closely and intermediates may be expected to occur. In the *merula* group of species both forms are found, and, like every other feature of this enormous genus, it may appear in a transitional state. In the few Indian species whose allocation on that account may seem a little dubious, if the stria is not absolutely complete, it is at least indicated by a distinct row of punctures and the actual edge is a little reflexed.

The genus has been subdivided into very numerous genera and subgenera by different authors, all of whom have based their systems upon the species of some restricted region (like that of Reitter upon the Palæarctic, and that of Casey on the Nearctic species) or upon series of species forming only a minute fraction of those now known (as in the schemes of Blanchard, Hope and others). The characters employed invariably break down when applied to other species or faunas than those upon which they were founded.

It would have been easy to apply names (generic or subgeneric) to the sections into which the Indian species of *Anomala* are divided in the following table but I have not done so because, in my opinion, it would merely add to the existing confusion and,

without in any way assisting those concerned with the Indian fauna, put serious obstacles in the path of those who have occasion in the future to study the numerous allied inhabitants of other regions of which we are as yet almost entirely ignorant. Many entomologists are in the habit of multiplying genera wherever the number of species ranged under a single name appears to them to be too large, but the distinctions in many such cases are so slight and so liable to become obliterated as additional forms become known that no real advantage is gained. The more numerous the allied species occurring in Nature the less appreciable are the breaks separating them and the larger must be the assemblages which are the real equivalents of the genera recognised in other groups of animals less numerous in species. Although the limits of genera must be arbitrarily fixed, they are worthless if applicable only to the representatives from a particular region, and any general dismemberment of a wide-spread genus in a work devoted to a special fauna seems to me ill-advised. The existence of a multitude of species under a single generic name certainly renders it very desirable to reduce them to order, but it is certain that, whether all or only a part of the species are dealt with, it is quite possible to bring them into an orderly system, by which they may with due care be accurately determined, without the introduction of new names which may become, as an ever-increasing number does become, a mere encumbrance in the future.

There is one feature which all who have attempted a subdivision of *Anomala* have agreed in regarding as an important generic character, viz., the presence or absence of a mesosternal process, but, after a long-continued effort to accept the existence of a process as distinguishing a separate genus (*Spilota*), I have been finally obliged to abandon it, the Indian species alone showing this part in practically every stage, from the slender spike of *A. auronitens* to its virtual disappearance in *A. pyroscelis*. Casey has attempted to meet this difficulty in the American species by using, in combination with the presence or absence of a process, the persistence or otherwise of the suture between the meso- and metasternum. This suture he finds to be obliterated in the group with a produced mesosternum; but, while this is true of the majority of species, there are certain forms, e. g., *A. rosetti*, Nonfr., and *A. isolata*, Arrow, in which, though the mesosternum is produced, the suture is not obliterated; nor is it possible to avoid the dilemma by grouping the recalcitrant species together in yet another genus, for they are certainly not closely related.

About nine hundred species of *Anomala* have been described in all, and, in my opinion, in the interests of a practical and consistent classification, no alternative at present exists to treating them as a single genus.

In such an immense mass of species there must be some diversity of habits, but all those of which we have any infor-

mation spend their larval life feeding upon the roots of grasses, cereals, sugar-cane, etc., sometimes causing considerable damage. The life-history of *A. polita*, Blanch. (? *Anomala varians*) has been described in detail by Mr. H. Maxwell Lefroy and is recapitulated in the Introduction to this volume.

The following species, although they have been catalogued as Indian, are not here included for the reasons given :—

Melolontha femoralis, Oliv., is not recognisable.

M. palleola, Gyll. The habitat is given as "Ind. Or.," a term of uncertain import. Burmeister regarded the species as synonymous with *A. variegata*, Hope, but Hope confused more than one species under that name.

M. semivirens, Gyll. The habitat is not recorded.

M. ypsilon, Wied. This is *Anomala pallida*, F., a species from Java.

Euchlora aureola, Hope, said to have been brought from Burma, appears to be really confined to the Malayan Region.

Anomala cribrata, Blanch., appears to be a Sumatran species.

A. duvauceli, Blanch., attributed to Bengal, is really the Malayan *A. cuprascens*, Wied.

A. elegans, Blanch., is a Chinese insect.

A. obsoleta, Blanch. ("Ind. Or."), is probably from Siam. It has been recently reported (by Leefmans) from Java, but this requires confirmation.

A. infixa, Walker (Ceylon). The type is unknown and the species cannot be identified.

A. punctatissima, Walk., is a species of *Apogonia* (Melolonthinæ).

A. brachypus, Bates. The type-specimen is conspecific with the Malayan *A. breviceps*, Sharp. I have already recorded the fact that other species described by Bates in the same paper as from the Punjab are really Malayan.

A. holomelæna, Bates, is another Malayan insect.

A. imitatrix, Nonfr. I cannot identify this, and it is likely that, as in many other cases, Nonfried has made some error.

I have divided the Indian species of *Anomala* into six sections, three of which contain the great majority of the species. The sections may be distinguished as follows :—

1 (10) Mesosternum without an intercoxal process.	
2 (5) Clypeus of the male with sharp front angles; elytra of the female angularly dilated.	
3 (4) Small species, with bidentate front tibia.	Section I, p. 131.
4 (3) Large species, with tridentate front tibia.	Section II, p. 136.
5 (2) Clypeus of the male with rounded or obtuse front angles; elytra of the female not angularly dilated.	

6	(9) Hind legs not extremely massive; pronotum not strongly attenuated in front.	
7	(8) Base of the pronotum completely margined	Section III, p. 137.
8	(7) Base of the pronotum not completely margined	Section IV, p. 199.
9	(6) Hind legs extremely massive; pronotum strongly attenuated in front	Section V, p. 237.
10	(1) Mesosternum produced between the middle coxæ	Section VI, p. 239.

Section I.

The stoutly-built abdomen and very short elytra, the uniformly rounded base of the pronotum, and still more the curious shape of the clypeus of the male, give the small species allied to *A. tenella*, Bl., and *A. hindu*, Hell., a peculiar aspect, and have led to their being formed into a separate genus, *Singhala*. I have not been able to adopt this, however, for no substantial differential characters can be found for it, except the sexual features in the clypeus of the male and the elytral dilatation of the female, both of which recur in *Anomala dorsalis*, F. (constituting Section II), to which, in spite of its very different size and shape, these little species seem to show an interesting relationship. *A. dorsalis*, F., however, cannot naturally be dissociated from the dull-coloured group of Anomalas with three-toothed front tibiæ forming part of Section III, and its points of difference from the *Singhala* group are as important as its points of similarity.

Key to the Species.

1	(4) Not metallic.	
2	(3) Pronotum densely punctured	*hindu*, Hell., p. 131.
3	(2) Pronotum not densely punctured	*helleri*, Oh., p. 132.
4	(1) Metallic.	
5	(6) Clypeus rugose; pronotum closely punctured	*tenella*, Bl., p. 133.
6	(5) Clypeus separately punctured; pronotum sparsely punctured.	
7	(8) Body narrowly oval	*polymorpha*, Arr., p. 134.
8	(7) Body broadly oval	*robusta*, Oh., p. 135.

112. Anomala hindu.

Singhala hindu, Heller,* Deutsche Ent. Zeits. 1891, p. 291.

Blood-red, with the forehead and vertex of the head black, and frequently also with a dark patch upon the pronotum behind the head; or with the whole discoidal part of the pronotum and parts of the outer margins of the elytra black; or entirely black, except the femora and narrow lateral margins to the prothorax.

Compact and convex, with broad elytra, very smooth and shining, and almost devoid of hair. The head and pronotum are finely, evenly and densely punctured. The sides of the pronotum are strongly rounded, the front angles nearly right angles, the hind angles very obtuse, the base simply and gently rounded in an uniform curve, and very finely margined. The scutellum bears a few punctures, and the elytra strongly impressed lines of rather coarse punctures, those of the second line being broken up in the anterior half and broadly scattered; the apical margins are separately rounded. The pygidium is rather sparingly punctured, and the metasternum still more so. The front tibia is armed with two sharp teeth, and the longer front and middle claws are cleft.

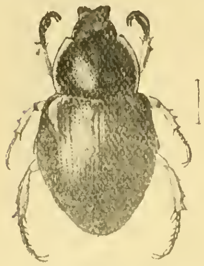

Fig. 29.—*Anomala hindu*, ♂.

♂. The clypeus is shining and sparingly punctured, strongly dilated and reflexed in front, with the front margin notched in the middle and produced outwardly on each side. The front tibia is broad, its teeth extremely sharp, the front tarsus greatly shortened and thickened, the last joint very large, and the inner claw dilated and bent at the base.

♀. The clypeus is rugosely punctured and not shining, rather broad and rectangular, with its front margin nearly straight and strongly reflexed. The elytra are dilated and thickened near the middle of the outer margins.

Length, 5–6·5 mm.; breadth, 3–3·5 mm.

Ceylon: Balangoda, 1776 ft. (*G. Lewis*, March), Kandy (*E. E. Green*, Oct.).

Type in the Dresden Museum.

Mr. Lewis found this upon *Hibiscus* flowers.

113. Anomala helleri.

Singhala helleri, Ohaus,* Deutsche Ent. Zeits. 1905, p. 90.

Orange-red or chocolate-brown, with the clypeus and lower surface, except the tarsi and abdomen, pale.

It is ovate and convex, smooth and shining, with only a very fine and scanty clothing of hairs upon the lower surface. The head and pronotum are finely and rather evenly, but not closely, punctured. The latter is strongly rounded at the sides, the front angles are nearly right angles, but not sharp, the hind angles are nearly obsolete, and the base is gently and uniformly rounded in a single curve, with a fine marginal line, which is interrupted in the middle. The scutellum bears a few fine punctures, and the elytra have each seven rather closely placed dorsal rows of strong and close punctures, the second row disrupted at the base; the membranous margin is moderately broad. The pygidium and metasternum are rather coarsely punctured. The front tibia is

armed with two strong sharp teeth, and the longer claw of the front and middle feet is cleft.

♂. The clypeus is dilated and strongly reflexed in front, its front margin broad and only very feebly curved, the angles forming sharp outwardly directed teeth. The front tibia is broad and its teeth short, the front and middle tarsi are rather thickened, and the inner front claw dilated and rather long.

♀. The clypeus is short and broad, and the elytra have a slight thickened horizontal flange at the outer margin behind the shoulder.

Length, 7–8 mm.; breadth, 4 mm.

MADRAS: Mahé, Malabar.

Type (♂) in Dr. Ohaus' collection, ♀ in the Dresden Museum.

114. Anomala tenella.

Singhala tenella, Blanch., Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 198.
Omaloplia semicincta, Walker,* Ann. Mag. Nat. Hist. (3) iii, 1859, p. 55.
Phylloperthina scutellata, Motch., Bull. Soc. Imp. Nat. Moscou, 1863, p. 469; id., op. cit. 1861, pl. 9, fig. 25.
Singhala vidua, Heller, Deutsche Ent. Zeits. 1891, p. 294; Ohaus, op. cit. 1905, p. 90.

Orange or bright testaceous yellow, suffused above and beneath with a golden green or coppery lustre. The forehead and vertex, the pronotum (except its outer and hind margins), the scutellum (generally), the elytral suture, outer and posterior margins and a conspicuous transverse patch surrounding the scutellum are black. Parts of the metasternum, the posterior half of the hind tibia and the tarsi are also dark-coloured.

It is a minute species, with very short and broad elytra and rather convex form. The surface is shining and almost without hair above and beneath. The head is strongly and closely punctured, the pronotum closely, evenly and rather finely, with its base rounded in a single uniform curve, the sides gently rounded, the front angles acute, and the hind angles almost obsolete; the basal marginal stria is not complete. The scutellum is very short and broad and well punctured. The elytra bear a sutural and five discoidal lines of separate punctures and finer scattered punctures on the intervals; the apical edges are separately rounded, the sutural angles almost obsolete and the membranous margins moderately wide. The pygidium and the sides of the metasternum are rather coarsely and rugosely punctured. The front tibia is armed with two strong teeth, and the larger claw of the front and middle feet is cleft.

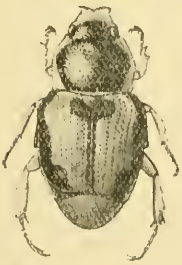

Fig. 30.—*Anomala tenella*, ♂.

♂. The clypeus is coarsely punctured and shining, dilated in front, strongly reflexed, with its front margin gently excised in the middle and a little produced outwardly on each side. The front tibia is broad, its teeth sharp, the front tarsus shortened and thickened, the last joint very large and the inner claw strongly bent, with a much dilated lower lobe.

♀. The clypeus is broad and transverse, granulated and opaque, with the front margin only slightly reflexed and the angles rounded. The elytra are a little dilated just before the middle and there is a slight thickening of the outer margins at the widest part.

Length, 4·5–6 mm.; breadth, 2·5–3·5 mm.

CEYLON: Diyatalawa (*T. Bainbrigge Fletcher*, Sept.), Kotmak (*E. E. Green*), Balangoda (*G. Lewis*, March), Bogawantalawa (*G. Lewis*, March and April), Galle (*V. Doria*, May).

Type in the Paris Museum; that of *S. vidua* in the Berlin Entomological Museum; and of *O. semicincta* in the British Museum.

Mr. E. E. Green found this species in great numbers destroying tea-plants.

From a specimen compared with the type, which Dr. Ohaus kindly sent to me, *A. vidua* appears to have been based upon a pale specimen of *A. tenella* in which all the dark markings are absent.

115. Anomala polymorpha.

Anomala (*Singhala*) *polymorpha*, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 486.

A comparatively large species of similar form to *A. helleri*, Ohaus, but distinguished by its pale ground-colour and metallic lustre. The head and clypeus are more strongly, and the pronotum much more lightly punctured.

Five specimens of this species taken by Mr. H. L. Andrewes are all different in colour. All have a yellow ground-colour, with a slight golden lustre upon the upper surface:—

(*a*) is a female, entirely yellow, with the head and pronotum a little more orange;

(*b*) is a female, with a vague crescentic brown mark on each side of the pronotum;

(*c*) is a male, with the head behind the eyes, a circular patch in the middle of the pronotum, the suture (narrowly), basal (broadly) and external margins of the elytra and the basal segments of the abdomen dark;

(*d*) is a female, with the head behind the eyes, the pronotum, except the lateral margins, and the elytra dark;

(*e*) is a female, with the elytra alone dark.

It is oval, not very convex, and almost devoid of hairy clothing. The head and clypeus are rather strongly but not rugosely punctured, the pronotum very lightly and sparingly punctured an

shining, with the sides and base gently rounded, the latter very narrowly margined and the hind angles obsolete. The scutellum is distinctly punctured, and the elytra bear rows of rather close strong punctures. The pygidium is strongly and moderately closely, the metasternum very coarsely, and the abdomen rather strongly, punctured. The front tibia is strongly bidentate and the longer claw of the front and middle feet cleft.

Length, 7·5–8 mm.; breadth, 4 mm.

MADRAS: Nilgiri Hills (*H. L. Andrewes*); Sanivarsandai, Coorg, 4000 ft. (*T. V. Ramakrishna*, April).

Type in the British Museum.

116. Anomala robusta.

Singhala robusta, Ohaus.

Testaceous, with the forehead and vertex, the pronotum (except a fine marginal line), the extreme edges of the elytra (the lateral margins a little more widely), and the tarsi black, with a slight metallic lustre; or entirely bluish- or greenish-black.

It is oval in shape, dilated beyond the shoulders, and very smooth and shining. The head is finely, but not densely punctured, and the pronotum very finely, but a little more strongly towards the sides. The lateral margins of the latter are strongly rounded, the front angles scarcely acute, the hind angles very blunt, and the base gently rounded and not completely margined. The scutellum is finely punctured, and the elytra are dilated laterally in the anterior part and bear moderately close but rather irregular lines of strongly impressed punctures, the subsutural interval broad and irregularly punctured anteriorly. The pygidium is moderately coarsely and closely pitted. The front tibia is bidentate, the hind tibia moderately stout, and the longer claw of the front and middle feet cleft.

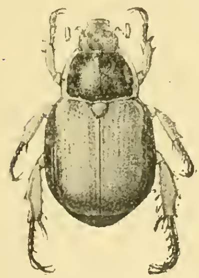

Fig. 31.—*Anomala robusta*, ♂.

♂. The clypeus is a little produced, with a broad, nearly straight, laterally dilated and strongly reflexed front edge and sharp angles. The legs are stout, the teeth of the front tibia very sharp, the front tarsus thick and the inner front claw broadly dilated.

♀. The clypeus is entirely rounded; the lateral margins of the elytra are a little thickened behind the shoulders; the terminal tooth of the front tibia is long and blunt, and the hind tibia is a little dilated at the end.

Length, 8–9 mm.; breadth, 5 mm.

MADRAS: Travancore.

The male specimen is pale, with dark markings, and the female entirely dark, but it is possible that the coloration is inconstant.

This species has been described from an example of each sex submitted to me by Dr. Ohaus in 1914 with the then unpublished name *Singhala robusta.* Owing to the war, the specimens have remained in the custody of the British Museum. I have no knowledge whether the name has been published or not.

Section II.

This section contains only a single species.

117. Anomala dorsalis. (Plate II, fig. 21.)

Melolontha dorsalis, Fabr., Syst. Ent. 1775, p. 35; id. Syst. Eleuth. ii, 1801, p. 168; Herbst, Natursyst. Käf. iii, 1790, p. 64, pl. 22, fig. 12.
Melolontha pallida, Oliv., Entom. i, 5, 1789, p. 25, pl. 9, fig. 103.
Anomala dorsalis, Burm., Handb. Ent. iv, 1, 1844, p. 232.
Var. *Anomala fraterna,* Burm., l. c.
Var. *Anomala centralis,* Nonfr.,* Berl. Ent. Zeits. 1893, p. 335.
? *Anomala imitatrix,* Nonfr., Ent. Nachr. xx, 1894, p. 12.

Testaceous or reddish, generally with the vertex of the head, the elytral suture, the hind tibiæ and the tarsi blackish, or with a broad sutural stripe, or with the upper surface largely or entirely black.

The body is moderately elongate, not very convex, nor very shining, with a very scanty clothing of short yellow hairs beneath. The clypeus and forehead are densely, scarcely rugosely, punctured. The pronotum is very minutely and thinly punctured, with the sides strongly rounded, the front angles not acute, the hind angles very obtuse, and the base completely margined and scarcely sinuated. The scutellum bears a few fine punctures and the elytra are strongly and irregularly punctured, with a juxta-sutural line and four or five double rows of regular punctures. The pygidium is minutely and sparingly punctured, the metasternum rather finely and not very closely, and the ventral segments bear each a transverse row of punctures. The mesosternum is not pointed. The front tibia bears two sharp teeth and a feeble upper one, and the longer claw of the front and middle feet is cleft.

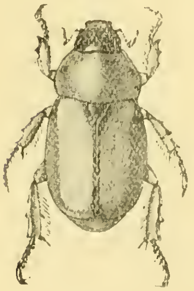

Fig. 32.—*Anomala dorsalis.*

♂. The clypeus is slightly produced, with the front margin straight and strongly reflexed and the angles rectangular. The front tarsus is thickened and the inner claw broad, moderately sharp and deeply cleft. The pygidium is convex.

♀. The clypeus is straight in front and strongly reflexed, with the angles rounded. The elytra have a slight, almost angular,

flange a little before the middle of the outer margin. The pygidium is flat and oblique.

Length, 14–17 mm.; breadth, 8–9 mm.

MADRAS: Coimbatore (*T. B. Fletcher*, Sept., Oct.), Bangalore, 3000 ft.; BOMBAY: Surat (June), Khandesh, Dhulia (June); CENTRAL PROVINCES: Nagpur (*E. A. d'Abreu*); PUNJAB: Lyallpur (July), Amballa (July); UNITED PROVINCES: Dehra Dun (Sept.); BENGAL: Pusa (*H. M. Lefroy*, May, June), Chapra (*Mackenzie*), Calcutta, Chota Nagpur; SIKKIM; ASSAM: Sibsagar; ANDAMAN Is.

Type unknown; that of *A. fraterna* in the Halle Museum; that of *A. centralis* in Dr. Ohaus' collection.

This variable insect seems to be almost universal in the plains of India and is constantly attracted by light. I have received specimens taken on *Datura* and also on Bhindi flowers.

A. dorsalis var. (*a*).

Testaceous, with the vertex, extreme posterior margin of the pronotum, scutellum (generally), elytral suture, hind tibiæ and all the tarsi black.

BENGAL: Chapra; MADRAS: Podanur.

A. dorsalis var. (*b*) **centralis.**

Testaceous, with the vertex, pronotum (except the lateral margins) and the elytra black, the clypeus, hind tibiæ and all the tarsi deep red.

PUNJAB: Simla (Paris Mus.); HAIDERABAD: Secundarabad (*A. K. Weld Downing*); BENGAL: Chota Nagpur (Berl. Ent. Mus.).

A. dorsalis var. (*c*) **fraterna.**

Chestnut-red with the forehead, the scutellum and a narrow sutural line dark.

BENGAL: Pusa (*H. Maxwell Lefroy*), Maldah (*W. H. Irvine*), Khoolna (April); CENTRAL PROVINCES: Gwalior; PUNJAB: Amballa (July).

SECTION III.

1 (74) Non-metallic.
2 (3) Lower surface black; front tibia bidentate .... *transversa*, Burm., [p. 142.
3 (2) Pale-coloured (sometimes partly dark above); front tibia tridentate, with a few exceptions.*
4 (39) Longer claw cleft on the middle feet.
5 (6) Front margin of the clypeus gently excised .... *bengalensis*, Bl., p. 143.
6 (5) Front margin of the clypeus not excised.

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* *A. anchoralis, nigrovaria, tincticeps, nilgirensis, discors, variivestis, madrasica, pellucida,* and *blanchardi.*

7 (16) Large and elongate; elytra not sulcate, nor strongly punctured.

8 (9) Upper surface brown .... *olivieri*, Sharp, p. 143.

9 (8) Upper surface pale.

10 (13) Hind tibia and tarsus very dark, the latter very thick.

11 (12) Broader, with the hind tibia and tarsus more massive .... *illusa*, Arr., p. 144.

12 (11) Longer, with the hind tibia and tarsus less massive .... *elata*, F., p. 145.

13 (10) Hind tibia not very dark, the tarsus not very thick.

14 (15) Hind tibia and tarsus not very slender .... *superflua*, Arr., p. 145.

15 (14) Hind tibia and tarsus slender ...... *polita*, Bl., p. 146.

16 (7) Smaller, with sulcate or strongly punctured elytra.

17 (24) Narrow and elongate.

18 (23) Strongly convex.

19 (20) Front tibia tridentate; elytra with opaque lateral areas .... *bilunata*, Fairm., p. 147.

20 (19) Front tibia bidentate; elytra without opaque lateral areas. [p. 148.

21 (22) Clypeus dark, rugose .... *anchoralis*, Lansb.,

22 (21) Clypeus pale, smooth and shining.... *nigrovaria*, sp. n., p. 149.

23 (18) Rather depressed.................. *clerica*, sp. n., p. 150.

24 (17) Short and compact.

25 (32) Front tibia tridentate.

26 (27) Elytra very closely sculptured ...... *rugosa*, Arr., p. 150.

27 (26) Elytra not very closely sculptured.

28 (29) Scutellum very broad.. .. .. *singularis*, sp. n., p. 151.

29 (28) Scutellum not very broad.

30 (31) Larger; dark patches upon the pronotum coalescing before reaching the base .... *varicolor*, Gyll., p. 152.

31 (30) Smaller; dark patches upon the pronotum not coalescing before reaching the base .... *ruficapilla*, Burm., [p. 152.

32 (25) Front tibia bidentate.

33 (34) Pronotum immaculate .... *tincticeps*, sp. n., p. 154.

34 (33) Pronotum decorated with dark patches.

35 (36) Elytra rather feebly striated .... *nilgirensis*, sp. n., p. 154.

36 (35) Elytra deeply striated.

37 (38) Pygidium shining .... *discors*, Karsch, p. 155.

38 (37) Pygidium not shining .... *variivestis*, sp. n., p. 155.

39 (4) Longer claw of the front feet only cleft.

40 (45) Clypeal margin biangulated.

41 (44) Clypeal margin notched in the middle.

42 (43) Hind tibia pale; middle femur without a close fringe of hairs .... *bilobata*, Arr., p. 156.

43 (42) Hind tibia black; middle femur with a close fringe of hairs .... *fissilabris*, Arr., p. 157.

44 (41) Clypeal margin straight in the middle. *anguliceps*, sp. n., [p. 158.

45 (40) Clypeal margin regularly rounded.

46 (47) Elytra entirely black .... *tristis*, sp. n., p. 158.

47 (46) Elytra not entirely black.

48 (53) Front tibia bidentate.

49 (52) Suture of elytra not dark; pronotum not closely punctured.
50 (51) Pronotum and elytra not uniformly pale . . . . *madrasica*, sp. n., p. 159.
51 (50) Pronotum and elytra uniformly pale . . *pellucida*, Arr., p. 159.
52 (49) Elytral suture dark; pronotum closely punctured . . . . *blanchardi*, n. n., p. 160.
53 (48) Front tibia tridentate (the uppermost tooth sometimes very feeble).
54 (57) Scutellum dark.
55 (56) Hind angles of the pronotum completely rounded off . . . . *semiusta*, Arr., p. 160.
56 (55) Hind angles of the pronotum indicated. *infantilis*, Arr., p. 161.
57 (54) Scutellum pale.
58 (67) Hind tibiæ not very broad.
59 (64) Shoulders not black-spotted.
60 (61) Pronotum coarsely punctured . . . . . *mollis*, sp. n., p. 162.
61 (60) Pronotum finely punctured.
62 (63) Intervals of the elytra very unequal . . *conformis*, Walk., [p. 162.
63 (62) Intervals of the elytra subequal . . . . *walkeri*, Arr., p. 163.
64 (59) Shoulders black-spotted.
65 (66) Large; 3rd tooth of the front tibia scarcely traceable . . . . *gravida*, Arr., p. 163.
66 (65) Smaller; 3rd tooth of the front tibia distinct . . . . *communis*, Burm., [p. 164.
67 (58) Hind tibiæ very broad.
68 (71) Vertex of the head black.
69 (70) Pronotum strongly punctured . . . . . . *andamanica*, sp. n., [p. 165.
70 (69) Pronotum finely punctured . . . . *latipes*, Arr., p. 165.
71 (68) Vertex of the head not black.
72 (73) Elytra not very elongate . . . . *biharensis*, sp. n., p. 166.
73 (72) Elytra very long and narrow . . . . *stenoptera*, sp. n., p. 167.
74 (1) More or less metallic (sometimes very faintly); front tibiæ bidentate, except in *A. antiqua* and *A. erosa*.
75 (78) Front tibia armed with three teeth.
76 (77) Elytra not distinctly striated . . . . *antiqua*, Gyll., p. 167.
77 (76) Elytra deeply striated . . . . *erosa*, Arr., p. 168.
78 (75) Front tibia armed with two teeth.
79 (94) Eyes very large and prominent (the intervening space in the male less than their combined breadth); clypeus very small (especially in the male), not strongly transverse, except in *A. vivida*.
80 (89) Hind tibia not very short and broad.
81 (84) Entirely metallic above.
82 (83) Very shining . . . . *vivida*, sp. n., p. 169.
83 (82) Rather dull above . . . . *procrastinator*, sp. n., [p. 170.
84 (81) Upper surface lightly metallic in front only.
85 (86) Pygidium clothed with long hair . . . . *luridicollis*, Arr., p. 170.
86 (85) Pygidium not clothed with long hair.
87 (88) Hind angles of the pronotum rounded off; male with the longer front and middle claws cleft . . . . *ægrota*, sp. n., p. 171.

88 (87) Hind angles of the pronotum indicated but blunt; male with all the claws entire .... *prænitens*, sp. n., p. 171.

89 (80) Hind tibia very short and broad.

90 (91) Pronotum not very broad, rugosely punctured; longer front and middle claws cleft .... *stenodera*, sp. n., p. 172.

91 (90) Pronotum very broad, finely punctured; male with all the claws simple.

92 (93) Elytra deeply sulcate, not very shining .... *macrophylla*, Wied., [p. 173.

93 (92) Elytra very shining, not deeply sulcate .... *euops*, sp. n., p. 173.

94 (79) Clypeus not very small, or, if small, strongly transverse; eyes not very large and prominent (the intervening space wider than their combined breadth, except in males of *A. dorsopicta* and *marginipennis*).

95 (106) Metasternum entirely clothed with thick hair.

96 (99) Scutellum grooved on each side.

97 (98) Brown; intervals of the elytra dissimilar .... *propinqua*, Arr., p. 174.

98 (97) Black; intervals of the elytra similar. *anthracina*, Arr., p. 175.

99 (96) Scutellum not grooved on each side.

100 (105) Not uniformly coloured; strongly punctured.

101 (104) Pygidium dark, pale-bordered.

102 (103) Pygidium finely rugose; elytra not deeply striated .... *fulvohirta*, Arr., p. 176.

103 (102) Pygidium coarsely rugose; elytra deeply striated .... *discalis*, Walk., p. 176.

104 (101) Pygidium pale yellow .... *dilatata*, sp. n., p. 177.

105 (100) Uniformly red, very shining ...... *ignicollis*, Bl., p. 178.

106 (95) Metasternum not entirely clothed with thick hair.

107 (140) Hind tibia stout, not long.

108 (115) Larger; rather depressed and oblong.

109 (114) Very feebly metallic in front only; elytra entirely striated.

110 (111) Pronotum pale at the sides and middle .... *dorsopicta*, Arr., p. 178.

111 (110) Pronotum entirely pale.

112 (113) Pronotum finely punctured ...... *fallaciosa*, sp. n., p. 179.

113 (112) Pronotum strongly and closely punctured .... *marginipennis*, Arr., [p. 180.

114 (109) Entirely metallic; elytra not striated. *viridilatera*, sp. n., [p. 181.

115 (108) Small; oval and convex.

116 (117) Elytra conjointly broader than long. *birmana*, Hell., p. 181.

117 (116) Elytra not abbreviated.

118 (133) Upper tooth of the front tibia short.

119 (128) Pronotum not closely punctured.

120 (125) Straw-coloured, with dark markings.

121 (122) Head shining, punctured .... *hamifera*, Walk., p. 182.

122 (121)	Head rugose.	
123 (124)	Very small; dark sutural line narrow	*mus*, Arr., p. 183.
124 (123)	Larger; sutural area broadly dark..	*pomona*, sp. n., p. 184.
125 (120)	Golden, without dark markings.	
126 (127)	Punctures of the elytra entirely in lines	*dalbergiæ*, sp. n., p. 184.
127 (126)	Punctures of the elytra not entirely in lines	*aurora*, Arr., p. 185.
128 (119)	Pronotum closely punctured.	
129 (130)	Pygidium not hairy	*fracta*, Walk., p. 185.
130 (129)	Pygidium hairy.	
131 (132)	Elytra not spotted; prosternum not elevated behind the front coxæ	*puella*, Arr., p. 186.
132 (131)	Elytra spotted; prosternum elevated behind the front coxæ	*ænigma*, sp. n., p. 187.
133 (118)	Teeth of the front tibia long and sharp.	
134 (139)	Hind angles of the pronotum obsolete.	
135 (136)	Front margin of the clypeus slightly excised	*leporalis*, sp, n., p. 187.
136 (135)	Front margin of the clypeus not excised.	
137 (138)	Eyes of moderate size; punctures of the pygidium confused	*decipiens*, sp. n., p. 188.
138 (137)	Eyes larger; punctures of the pygidium very large and distinct	*siliguria*, sp. n., p. 188.
139 (134)	Hind angles of the pronotum distinct	*læta*, sp. n., p. 189.
140 (107)	Hind tibia long.	
141 (158)	Hind tibia very slender, not inflated.	
142 (155)	Pronotum not hairy.	
143 (144)	Pygidium entirely hairy..........	*angusta*. Arr., p. 190.
144 (143)	Pygidium not entirely hairy.	
145 (154)	Clypeus much broader than long.	
146 (153)	Pronotum closely punctured, not very shining.	
147 (150)	Pronotum immaculate.	
148 (149)	Clypeus nearly straight in front ..	*aureoflava*, sp. n., p. 190.
149 (148)	Clypeus rounded in front	*testacea*, Hope, p. 191.
150 (147)	Pronotum decorated with dark marks.	
151 (152)	Pronotum more strongly punctured.	*variegata*, Hope, p. 192.
152 (151)	Pronotum closely and finely punctured	*comma*. sp. n., p. 193.
153 (146)	Pronotum very shining	*ciliatipes*, sp. n., p. 193.
154 (145)	Clypeus not much broader than long	*longiceps*, sp. n., p. 194.
155 (142)	Pronotum hairy.	
156 (157)	Hind angles of the pronotum sharp.	*pallidospila*, Arr., p. 195.
157 (156)	Hind angles of the pronotum not sharp	*cinderella*, sp. n., p. 196.
158 (141)	Hind tibiæ strongly inflated in the middle.	
159 (160)	Elytra feebly and incompletely striated	*chinensis*, Redt., p. 196.

160 (159) Elytra deeply striated.
161 (164) Intervals of the elytra equal.
162 (163) Body very narrow .... *fulviventris*, Bl., p. 197.
163 (162) Body not very narrow .... *signaticollis*, Nonfr., [p. 198.
164 (161) Intervals of the elytra alternately convex and flat................ *galerucina*, sp. n., p. 199.

118. **Anomala transversa.**

Phyllopertha transversa, Burm., Handb. Ent. iv, 2, 1855, p. 513.
Singhala basipennis, Fairm., Ann. Soc. Ent. France, 1889, p. 28; Ohaus, Stett. Ent. Zeit. 1898, p. 341.

Black, with a bright yellow band crossing the elytra before the middle and curving forwards at each end towards the shoulders. This band may be absent, leaving the insect wholly black, or it may extend until the elytra are entirely pale in colour except the outer margins. The pygidium may also be yellow in certain specimens, and I have seen examples in which there are broad orange margins to the pronotum in addition.

It is very short, broad and convex. The clypeus and forehead are finely rugose, the former small, with converging sides and the front margin slightly notched in the middle; the vertex is strongly punctured. The pronotum is coarsely and rather irregularly punctured, with an incomplete smooth longitudinal line along the middle; the sides are strongly curved, the front angles slightly acute, the hind angles rounded away, and the base gently rounded in a single uniform curve, with a complete fine marginal stria. The scutellum is broad, blunt and coarsely punctured. The elytra bear longitudinal rows of large deep punctures; they are short and separately rounded behind. The pygidium bears large scattered punctures, and the sides of the metasternum are sparingly punctured and clothed with grey hair. The front tibia bears two strong teeth, the hind tibia is moderately short, and the longer claw of the front and middle feet is cleft.

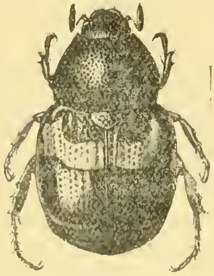

Fig. 33.—*Anomala transversa.*

♂. The lower lobe of the longer front claw is extremely broad.

Length, 6–6·5 mm.; breadth, 3·5 mm.

ASSAM: Khasi Hills, Shillong, 4000 ft. (*T. Bainbrigge Fletcher*, May); BURMA: Ruby Mines (*W. Doherty*), Tharrawaddy (*G. Q. Corbett*), Maymyo (*H. L. Andrewes*); TONKIN: Chapa (*R. Vitalis de Salvaza*).

Types of *transversa* and *basipennis* in M. René Oberthür's collection.

"This species was very common at Shillong in the Khasi Hills in May 1905, being found on cherry as a minor pest. Above

4000 ft. these beetles come out of the ground in enormous numbers by day and feed on white flowers, roses, spiræas, etc." (T. B. Fletcher, Agric. Research Inst., Pusa, Bull. 59, 1916, p. 4.)

119. Anomala bengalensis. (Plate II, figs. 26, 27.)

Anomala bengalensis, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 182.
Anomala pallidicollis, Blanch., l. c. p. 181 (n. syn.).

Pale testaceous yellow, with the head, the extreme edges of the pronotum, scutellum and elytra, the hind tibiæ and all the tarsi dark.

The shape is moderately elongate and rather massive, scantily clothed with hair beneath. The head is rather finely punctate-rugose with the clypeus broadly and transversely rectangular, its front margin strongly reflexed and almost straight, but rather more elevated at the angles, which are not sharp, than in the middle. The pronotum is very minutely punctured, with the sides strongly rounded, the front angles almost right angles, the hind angles very obtuse, and the base finely margined and feebly trisinuated. The scutellum bears a few fine punctures, and the elytra are moderately closely and deeply punctured, some of the punctures forming longitudinal rows. The pygidium is finely punctured at the sides and apex and minutely coriaceous in the middle of the basal part. The metasternum is finely punctured and clothed with coarse but not thick yellow hair, and the abdomen is shining and thinly setose. The front tibia is tridentate and the larger claw of the front and middle feet cleft.

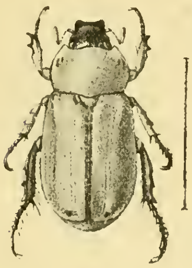

Fig. 34.—*Anomala bengalensis.*

♂. The teeth of the front tibia are sharp, the front tarsi rather thick and the inner claw unequally cleft.

♀. The apical tooth of the front tibia is long, but very blunt; the tarsus is slender, and the inner claw is equally divided.

Length, 19–23 mm.; breadth, 10–11 mm.

Bengal: Calcutta, Chota Nagpur (Berl. Ent. Mus.), Maldah (*W. H. Irvine*), Murshidabad, Pusa (*T. Bainbrigge Fletcher*, May, June); Madras: Vizagapatam Dist., Golgonda (*T. V. Ramakrishna*, April), Bangalore, 3000 ft. (*Dr. Travers*), Coimbatore (*T. B. Fletcher*, May); Burma: Mandalay (*Major Slade*).

Type in the Paris Museum.

In some specimens the elytra assume a reddish shade like that of the head, but it is not quite certain that this is not a *post mortem* alteration. The name *Anomala pallidicollis*, Bl., seems to have been given to such a discoloured specimen with the clypeus and front tibiæ worn down.

120. Anomala olivieri.

Anomala olivieri, Sharp,* Ann. Mag. Nat. Hist. (7) xii, 1903, p. 471.

Testaceous, with the head, the hind tibiæ and all the tarsi reddish, and the extreme front margin of the clypeus, the head behind the eyes, the pronotum (except the lateral margins, each of which has a small dark spot), the elytra and more or less of the pygidium, dark brown.

It is a rather massive, moderately elongate species, smooth but not very shining above, and clothed upon the lower surface and legs with long tawny hair. The head is rather finely punctate-rugose, with the front margin strongly reflexed and nearly straight. The pronotum is subopaque, with minute but not very close punctures; its sides are strongly curved, the front angles acute, the hind angles very obtuse, and the base margined and very feebly trisinuate. The scutellum bears a few minute punctures. The elytra are shallowly but rather coarsely punctured, most of the punctures arranged in longitudinal rows, except upon the very broad subsutural space. The pygidium bears fine, rather scattered, punctures, but is finely and lightly rugose at the sides, and shining and almost smooth at the apex. The front tibia is tridentate, the uppermost tooth very feeble, the hind tibia is moderately long and slender, and the larger claw of the front and middle feet is cleft.

♂. The club of the antenna is nearly twice as long as in the female; the apical tooth of the front tibia is short and sharp, and the inner front claw is very unequally cleft.

♀. The club of the antenna is short; the apical tooth of the front tibia is long and clubbed, and the inner front claw is nearly equally cleft.

Length, 19–20 mm.; breadth, 10·5–11 mm.

Madras: Utakamand (*Barber*, April), Kochin (Berl. Ent. Mus.).

Type in the British Museum; co-types in the Cambridge University Museum.

121. Anomala illusa. (Plate II, fig. 23.)

Anomala illusa, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 363.

This has the closest possible similarity to *A. elata*, F., and *A. superflua*, Arr., but it is rather broader and more convex and a little more shining, the head is less densely punctured, the clypeus narrower and less flat and opaque, and the legs are stouter, all the tibiæ being shorter and broader, and the basal joints of the middle and hind tarsi more compact. The third tibial tooth is almost obsolete. The ædeagus of the male has the paramera simply rounded externally and the ventral lobe bluntly pointed.

♂. The terminal tooth of the front tibia is acute.

♀. The terminal tooth of the front tibia is very blunt.

Length, 22 mm.; breadth, 12 mm.
CEYLON: Trincomali (*C. F. S. Baker*, *E. E. Green*, Sept.).
Type in the British Museum.

122. Anomala elata. (Plate II, fig. 22.)

Melolontha elata, Fabr., Ent. Syst. i, 2, 1792, p. 161; id., Syst. Eleut. ii, 1801, p. 167.
? *Melolontha varians*, Oliv., Ent. i, 5, 1789, p. 78, pl. 10, fig. 123.
Anomala elata, Burm., Handb. Ent. iv, 1, 1844, p. 233.

Testaceous, with the head, the extreme front and hind margins of the pronotum, all the margins of the elytra, the hind tibiæ, the extremities of the other tibiæ and all the tarsi black or very dark red.

It is elongate, rather parallel-sided, moderately convex and not very shining. The head is rather finely and closely punctured, with the clypeus transversely rectangular and nearly straight in front. The pronotum is exceedingly finely but not very closely punctured, with its sides regularly curved, the front angles slightly acute, the hind angles completely rounded off and the base finely margined. The scutellum is similarly punctured, and the elytra bear fine but rather larger punctures, most of them in irregular longitudinal rows. The pygidium is rather finely transversely striolated. The sides of the metasternum are densely punctured and rather closely clothed with moderately long pale hair. The front tibia bears three teeth, the uppermost one minute; the hind tibia is stout, the hind tarsus thick, and the longer claw of the four posterior feet cleft.

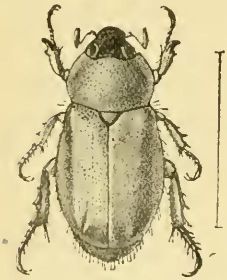

Fig. 35.—*Anomala elata.*

♂. The terminal tooth of the front tibia is sharp, and the inner front claw dilated.

♀. The terminal tooth of the front tibia is very blunt.

Length, 21–24 mm.; breadth, 11–13 mm.

MADRAS: Tranquebar, Bangalore (*Anstead*, May), N. Coorg, Mercara (*T. B. Fletcher*, May), S. Coorg, Pollibetta (*T. B. Fletcher*, May).

Type in the Copenhagen Museum.

It is not certain which of the closely related species of this group is the *Melolontha varians* of Olivier, which was wrongly attributed by him to the Cape of Good Hope.

123. Anomala superflua. (Plate II, fig. 25.)

Anomala superflua, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 362.

Pale testaceous, with the head and the extreme edges of the pronotum, scutellum and elytra black, and the clypeus (very deeply), the hind tibiæ and all the tarsi red.

The body is elongate, with the elytra only very slightly wider in the middle than at the shoulders, smooth but not very shining above and scarcely convex. The head is entirely very densely punctured, the clypeus nearly straight in front, with the sides slightly converging. The pronotum is extremely minutely and rather evenly punctured, finely but deeply margined all round, with the sides angulated near the middle, the front angles acute and the hind angles obtuse. The scutellum is finely punctured, and the elytra lightly but a little more coarsely, most of the punctures, except in the broad subsutural interval, forming rather indistinct lines. The pygidium is finely and irregularly punctured, the metasternum closely punctured and clothed with short erect pubescence at the sides, scantily punctured and pubescent in the middle. The abdomen is nearly smooth. The front tibia has three teeth and the larger claw of the front and middle feet is cleft.

♂. The terminal tooth of the front tibia is sharp.

♀. The terminal tooth of the front tibia is very blunt and strongly bent outwards.

Length, 19–22·5 mm.; breadth, 10–11·5 mm.

Ceylon: Peradeniya (*E. E. Green*), Sigiriya (*E. E. Green*, Sept.), Hakgala (*E. E. Green*, May), Kandy (*C. F. S. Baker*, April), Minuwangoda (*C. F. S. Baker*, Sept.), Kelani Valley, near Colombo (*W. Braine*).

Type in the British Museum.

This is not easily distinguishable from *A. elata*, F., except by means of the genitalia of the males, but the clypeus is of slightly different shape, its sides being gently convergent, and the elytra are long and parallel-sided, with relatively broad membranous margins, especially at the posterior lateral part. The ædeagus of the male is constricted just before the end and the paramera are divergent and globularly swollen at the apices.

124. **Anomala polita.** (Plate II, fig. 24.)

Anomala polita, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 182.

Testaceous, with the head, the extreme front and hind margins of the pronotum, all the margins of the elytra, the extremities of the tibiæ and all the tarsi black or very dark red.

It is elongate, rather parallel-sided, moderately convex and not very shining. The head is finely granulated, with the clypeus transversely rectangular, its margin strongly reflexed and the angles rounded. The pronotum is exceedingly finely and not very closely punctured, with its sides regularly curved, the front angles slightly acute, the hind angles completely rounded off and the base finely margined. The scutellum is similarly punctured, and the elytra bear fine but rather larger punctures, most of them in irregular longitudinal rows. The pygidium is rather finely transversely striolated. The sides of the metasternum are densely punctured and rather closely clothed with moderately long pale yellow hair. The front tibia bears three teeth, the uppermost

rather feeble, the hind tibia and tarsus are rather slender, and the longer claw of the front and middle feet is cleft.

♂. The terminal tooth of the front tibia is sharp, and the inner front claw dilated.

♀. The terminal tooth of the front tibia is blunt and clubbed.

Length, 22·5 mm.; breadth, 11·5 mm.

United Provinces: Agra (*C. F. Selous*, July), Dehra Dun (*N. C. Chatterji*, June); Bombay: Khandesh (*T. R. D. Bell*), Belgaum (*H. E. Andrewes*), N. Kanara (*T. R. D. Bell*); Bengal: Pusa (*H. Maxwell Lefroy*, May); Assam: Jaintia Hills.

Types in the Paris Museum.

The habits of this or an allied species have been studied by Mr. H. Maxwell Lefroy and described by him under the name of *Anomala varians* in vol. ii. of the Mem. Dept. Agric. India, 1910, p. 143. The larvæ appear to feed indifferently upon the roots of Gramineæ and other plants, having been found attacking millets, rice, sugar-cane, grasses, etc. It is reported as having caused considerable damage to a crop of ground-nuts, but it is possible that Mr. Lefroy's report refers to more than one species, for *Anomala bengalensis*, Bl., which was not distinguished by him, is perhaps the most abundant one in the part of India under his personal observation. A summary of his account of the life-history is given in the introductory remarks at the beginning of this volume.

125. Anomala bilunata.

Anomala bilunata, Fairm., Ann. Soc. Ent. France (6) viii, 1888, p. 341.

Testaceous, with the head red, and the vertex, the middle of the pronotum and more or less of the elytra (according to the sex)

Fig. 36.—*Anomala bilunata*, ♂.

Fig. 37.—*Anomala bilunata*, ♀.

brown or black. In the female the suture, a broad curved band crossing the elytra beyond the middle and ascending to the shoulders, and sometimes a patch surrounding the scutellum are dark. In the male the dark areas spread over the greater part of the elytra, leaving only a narrow pale band, which crosses the suture before the middle and ascends to the base within the shoulders, and a patch of variable size at the apex of each elytron.

It is elongate and cylindrical in shape, shining and almost devoid of hairy clothing, but with a peculiar opaque area near the end of the outer margins of the elytra. The head is rugosely punctured, with the clypeus transverse and the front margin nearly straight in the middle. The pronotum is rather coarsely and closely punctured, with a slight impressed line in the middle of its anterior half; the sides are strongly curved, the front angles acute and the hind angles almost obsolete. The scutellum is strongly punctured, and the elytra deeply sulcate, with large confluent punctures in the sulci and minute punctures upon the intervals; the membranous outer margin is narrow. The pygidium is closely, and the sides of the metasternum coarsely but not closely, punctured. The front tibia is armed with three strong teeth, and the longer claw of the front and middle feet is cleft.

Length, 11–12 mm.; breadth, 5·5–6 mm.

BHUTAN: Maria Basti (*L. Durel*); SIKKIM: Darjiling (*H. Ribbe*), Kalimpong (April, May), Pashok, Pedong (*Desgodins*); ASSAM: Manipur (*W. Doherty*); TONKIN (*H. Fruhstorfer*); S. CHINA.

The female has a deceptive resemblance to *A. anchoralis*, Lansb., but the three-toothed front tibia and the peculiar opaque areas at the sides of the elytra immediately distinguish it. The different coloration of the two sexes is an interesting feature.

126. Anomala anchoralis.

Anomala anchoralis, Lansb., C. R. Soc. Ent. Belg. xxii, 1879, p. 151.

Pale testaceous, with the head and tarsi reddish, and with brown or black markings, consisting of two oval obliquely placed patches at the middle of the pronotum (sometimes united at the middle line), the extreme edge of the elytra all round, and an angular dilatation of the sutural border on each side beyond the middle with the points directed towards the shoulders.

It is rather narrowly oval and very convex, smooth and shining, and almost without hairy clothing. The head is rugose and the clypeus short and broad. The pronotum is strongly punctured all over, with its sides strongly rounded, the front angles rather acute, the hind angles almost obsolete and the base very finely margined. The scutellum is moderately punctured, and the elytra are deeply striated, the intervals convex and the striæ closely punctured, the second stria transforming anteriorly into a broad patch of large punctures; the membranous margins are rather wide behind. The pygidium and the sides of the metasternum are closely punctured. The front tibia is bidentate, and the longer claw of the front and middle feet is cleft.

♂. The inner front claw is dilated, and the teeth of the front tibia are longer and sharper than in the female.

Length, 11–12·5 mm.; breadth, 6–7·5 mm.

BURMA: Meetan (*L. Fea*, April); JAVA; TONKIN.

Type in the Brussels Museum.

A. anchoralis is abundant in Java, where it is injurious to the

Cassava crop. It has been studied in all its stages by Mr. S. Leefmans, who has issued a report upon it in No. 13 of Mededeelingen van het Laboratorium voor Plantenziekten (Buitenzorg, 1915), p. 48. The beetle is figured in plate i, fig. 6, and the distinctive features of the larva are shown in plate vii, fig. 5. The beetles are described as nocturnal in their habits. They appear in October and November, and reduce the leaves of the Cassava plants to skeletons.

127. **Anomala nigrovaria**, sp. nov. (Plate III, fig. 18.)

Pale testaceous yellow, with the vertex of the head, two longitudinal marks (sometimes coalescing) at the middle of the pronotum, parts of the elytra, the extremities of the tibiæ and the tarsi black or brown.

It is elongate-oval, very convex, smooth and shining, and almost devoid of hair. The clypeus is broadly rounded and very smooth, almost without punctures, and the forehead is strongly punctured. The pronotum is strongly but rather unequally punctured, with the sides strongly rounded, the front angles nearly right angles, the hind angles very obtuse and the base finely margined. The scutellum is well punctured, and the elytra bear seven deeply impressed and punctured dorsal striæ, the second disrupted at the base. The pygidium is rather coarsely and closely punctured. The front tibia is armed with two strong teeth; the hind tibia is rather short and stout; the tarsi are rather long, and the longer claw is cleft on the front and middle feet.

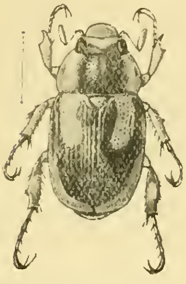

Fig. 38.—*Anomala nigrovaria*, ♂.

♂. The outer margins of the elytra, from the shoulders to about the middle, are dark and there is a broad dark patch common to both, sometimes uniting with the posterior end of the lateral stripe and generally extending along the suture to the base of the elytra (the scutellum remaining pale), but not reaching their extremities behind.

♀. The outer margins of the elytra, from the shoulders to about the middle, are narrowly dark and there is a dark spot on each immediately behind the scutellum, the two spots more or less coalescing; the suture is generally very narrowly dark.

Length, 9–11 mm.; breadth, 4·5–5·5 mm.

Burma: Teinzo (*L. Fea*, May), Tharrawaddy (*G. Q. Corbett*), Bhamo (*F. M. Mackwood*, April), Papun (*Col. Adamson*); Tonkin: Laokay (*R. V. de Salvaza*).

Type in the British Museum; co-types in the Genoa Museum.

The species is very like *A. anchoralis*, Lansb. The markings are variable, but the broad dark area upon the posterior half of the elytra is present in all the males and absent in all the females I have examined.

128. **Anomala clerica**, sp. nov.

Testaceous yellow, with the upper surface black, except the sides of the pronotum and sometimes a narrow basal margin and a short longitudinal stripe near the middle of each elytron, extending from the base to rather more than a quarter of its length, the two stripes slightly converging at their posterior ends. The clypeus, the hind tibia, the posterior part of the middle tibia and the tarsi are deep red.

It is moderately elongate and parallel-sided and rather depressed in form, with its broadest part a little before the end of the elytra. The clypeus and forehead are finely and rather feebly rugose, the former small and transversely rounded, the latter triangularly impressed in the middle, and the vertex closely and strongly punctured. The pronotum is also strongly and closely punctured, with the sides strongly rounded, the front angles acute, the hind angles slightly obtuse and the base completely margined. The scutellum is finely punctured and its apex impressed. The elytra are closely and coarsely but rather unevenly punctate-striate, with the second stria broadly disrupted at the base. The pygidium is rather strongly and evenly, not closely, punctured. The lower surface is well and evenly punctured, the metasternum thinly clothed with yellow hair. The legs are rather slender, the front tibia is armed with two short teeth, the hind tibia is slender, but inflated before the middle, and the longer claw is cleft at the tip upon the front and middle feet.

♂. The club of the antenna is rather long, and the front tibial teeth are very short and placed near together.

The ♀ is unknown.

Length, 13–14 mm.; breadth, 7–7·5 mm.

SIKKIM: Gopaldhara, Rungbong Valley, 6300 ft. (*W. K. Webb*), Peshoke Spur, Darjiling Dist. (*R. S. Lister*).

Type in the British Museum.

129. **Anomala rugosa.**

Anomala rugosa, Arrow, Trans. Ent. Soc. Lond. 1899, p. 263.

Testaceous yellow, with the head, the hind tibiæ (and the extremities of the others) and all the tarsi dark red, and a large triangular patch on each side of the pronotum, the extreme edges of the elytra and an oblique stripe extending from each shoulder to the apical callus (in the female), or the whole surface of the elytra except a narrow external pale border (in the male), black.

The body is oval, compact and convex, closely sculptured above and not very shining. The head is densely rugosely punctured, with the clypeus rounded at the sides and straight in front. The pronotum is finely and closely but not densely punctured, strongly rounded at the sides, with the front angles blunt and the hind angles rounded off; the base is finely margined and feebly trisinuated. The scutellum is short and closely punctured, and

the elytra are striated and closely punctured except at the outer margins. The pygidium is closely transversely punctured and bears a few long hairs near the apex. The sides of the metasternum are closely punctured and rather thinly clothed with

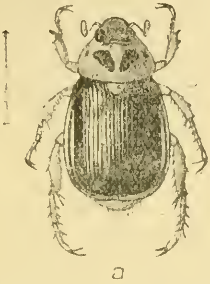

Fig. 39.—*Anomala rugosa*, ♂.

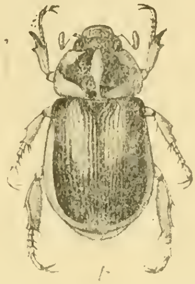

Fig. 40.—*Anomala rugosa*, ♀.

light hair. The front tibia is armed with three teeth, the hind tibia is a little constricted before the end, and the longer claw of the front and middle feet is cleft.

Besides the difference between the sexes in the coloration of the elytra already described, there is a strongly marked divergence in the sculpture of the elytra. Those of the male are deeply punctate-striate, except at the sides, which are irregularly punctured, and the intervals between the striæ are slightly convex and finely and closely punctured. In the female the fine punctures are distinguishable at the sides, but obliterated upon the whole dorsal surface, which is finely and densely rugose and completely opaque. The striæ are inconspicuous and the surface nearly flat.

In the male the apical tooth of the front tibia is moderately sharp and in the female it forms a very blunt rounded lobe.

Length, 12·5–14 mm.; breadth, 7–8 mm.

Punjab: Kulu; Nepal; Sikkim: Sukna, Darjiling Dist., 1000 ft. (May), Gopaldhara, Rungbong Valley (*H. Stevens*); United Provinces: Jolikote (May), W. Almora (*H. G. Champion*).

Type in the British Museum.

This species is entirely peculiar in the striking difference of sculpture that distinguishes the two sexes, which have been found together upon apricot trees at Jolikote.

130. **Anomala singularis**, sp. nov. (Plate IV, figs. 1, 2.)

Testaceous yellow, with the head, pronotum (except the lateral margins), scutellum, elytra, the anterior half of the pygidium, the extremities of the tibiæ and the tarsi dark red-brown.

Broadly oval in shape, very convex and rather shining. The clypeus is broadly rounded and, like the forehead, densely and rugosely punctured. The pronotum is very finely and rather sparsely punctured, with the sides quite evenly rounded, the front angles nearly right angles, the hind angles very blunt and

the base completely margined. The scutellum is very broad, irregularly punctured, and obliquely channelled on each side. The elytra are very deeply punctate-striate, with the second stria disrupted in its anterior half. The pygidium is shining and not very closely transversely striolated. The metasternum is rather thickly clothed (except in the middle) with fine erect yellow hairs. The legs are slender, the front tibia armed with two sharp teeth and a feeble upper one, the hind tibia slightly constricted before the extremity, and the longer middle claw only minutely cleft at the tip.

Length, 13 mm.; breadth, 7·5 mm.

MADRAS: Bangalore.

Type in the British Museum.

I have seen only two male specimens of this species, which is remarkable for the undivided longer front claw. It is possible that the female will be found to have the longer front and middle claws cleft.

131. Anomala varicolor. (Plate II, figs. 38, 39.)

Melolontha varicolor, Gyll., Schönh. Syn. Ins. i, 3, 1817, App. p. 114.

Testaceous, with the head, the extremities of the tibiæ and the tarsi dark red, and with a variable patch on each side of the pronotum (sometimes extending to the front, but not to the hind, margin, and the two patches frequently uniting), the extreme edges of the elytra, a sutural line, a spot on each shoulder (often extending obliquely almost to the apical angle and sometimes partly or entirely fused with the lateral margin), black or nearly black.

In the darkest phase the upper surface is entirely black, with the exception of the lateral margins of the pronotum, a very narrow incomplete hind margin and a humeral patch upon each elytron.

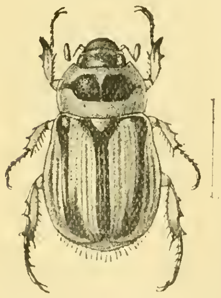

Fig. 41.—*Anomala varicolor.*

It is shortly oval, convex, smooth and shining, with the metasternum moderately closely clothed with short yellowish hair. The head is rather finely and densely rugose, with the clypeus broadly semicircular. The pronotum is finely punctured, with the sides rounded, the front angles scarcely acute, the hind angles rounded, and the base finely and completely margined. The elytra are deeply and finely punctate-striate, with the subsutural interval broad and closely punctured. The pygidium is rather closely transversely rugulose. The front tibia bears two well-developed teeth and a very feeble one above them, the hind tibia is rather inflated before the middle and contracted before the extremity, and the longer claw of the front and middle feet is cleft.

♂. The terminal tooth of the front tibia is sharp, and the inner front claw very slightly dilated.

Length, 14–17 mm.; breadth, 8–9 mm.

United Provinces: Jolikote; Sikkim: Gopaldhara, Rungbong Valley (*H. Stevens*); Bengal: Sarda (*F. W. Champion*), Pusa (May), Buxar Duars; Madras: Ganjam Dist., Parlakimedi, Bogga Forest (*T. V. Ramakrishna*, April), Bangalore, 3000 ft. (May), S. Arcot, Palni (*T. V. Ramakrishna*, August); Ceylon: Kandy (*C. F. S. Baker*, April), Peradeniya (*T. Bainbrigge Fletcher*, April); S. China.

Type in the Stockholm Museum.

In the amount of dark pigment this species varies very greatly, presenting a series of phases exactly parallel to those of *A. ruficapilla*, Burm. It may be distinguished by the fact that the dark thoracic patches are not divided by a narrow pale line, but tend to run together without extending to the base of the pronotum, which has practically always a pale border.

The females are, on the whole, darker than the males, although there is no dividing line between the light and dark forms. In a long series collected by Mr. H. Stevens in Sikkim females are four times as numerous as males and, although some are pale specimens, two-thirds of them are dark and only narrow thoracic margins and shoulder-patches upon the elytra remain pale on the upper surface These dark-coloured specimens appear never to bemales.

This is one of the commonest and most widely-distributed of Indian beetles. Mr. Bainbrigge Fletcher has found the larva at the roots of oats in Pusa, and the beetle at the foot of a pipal tree. It has also been observed to attack the leaves of plum trees.

132. Anomala ruficapilla. (Plate II, fig. 40.)

Anomala ruficapilla, Burm.,* Handb. Ent. iv, 2, 1855, p. 499.

Testaceous, with the head, the extremities of the tibiæ and the tarsi dark red, and with a large patch on each side of the pronotum, the extreme edges of the elytra, a broad sutural line and another extending obliquely from the shoulder almost to the sutural angle and partly or entirely fused with the lateral margin, black or nearly black.

It is shortly oval in shape, convex, smooth and shining. The head is rather finely and densely rugose, and the clypeus broadly semicircular. The pronotum is finely punctured, with the sides evenly rounded and the base finely and completely margined. The elytra are deeply and finely punctate-striate, with the subsutural interval broad and closely punctured. The pygidium is transversely strigose. The front tibia bears two strong teeth and (generally) a very feeble third tooth, the hind tibia is rather inflated before the middle, and the longer claw is cleft on the front and middle feet.

♂. The terminal tooth of the front tibia is sharp, and the inner front claw is slightly dilated.

Length, 11·5–13·5 mm.; breadth, 7–8 mm.

BOMBAY: Belgaum (*H. E. Andrewes*); MYSORE: Bangalore, 3000 ft. (*Anstead*, May); CEYLON: Kandy (*C. F. S. Baker*, April), Peradeniya (*E. E. Green*).

Type in the Halle Museum.

The locality Assam given in the original description is in all probability wrong. The cursory note in which this species was described by Burmeister is misleading and contains nothing of real value to distinguish the species from the closely similar *A. varicolor*, Gyll., the size, marking, sculpture, and even the toothing of the front tibia, being exceedingly variable, although these last are generally two-toothed in the present species and three-toothed in the other. One of the most constant features is the complete narrow median line of the pronotum, the dark thoracic patches usually extending from the front to the hind margin without uniting. The paramera of the ædeagus of the male are longer than in *A. varicolor*, and on one side slightly hooked.

133. **Anomala tincticeps**, sp. nov. (Plate IV, figs. 5, 6.)

Pale testaceous yellow, with the head, the sutural edges of the elytra (very narrowly), the extremities of the femora and tibiæ, and the tarsi red.

It is oval and convex, and moderately smooth and shining, with a thin clothing of pale hair at the sides of the sternum. The head is closely and rugosely punctured, with the sides of the clypeus and the vertex less rugose and more shining. The clypeus is short, with the margin strongly rounded at the sides and well reflexed. The eyes are moderately large and prominent. The pronotum is everywhere finely and evenly punctured, with the sides rather strongly rounded, the front angles right angles, the hind angles almost rounded off, and the base gently curved and finely and completely margined. The scutellum bears numerous fine punctures. The elytra bear seven strongly punctured and nearly equidistant dorsal striæ, the second disrupted at the base, and the intervals are very minutely punctulated; the marginal membranes are fairly broad at the hind margins. The pygidium is moderately strongly and closely punctured. The legs are stout, the front tibia strongly but bluntly bidentate, the hind tibia rather inflated in the middle, and the longer claw of the front and middle feet cleft.

♂. The eyes are rather larger and more prominent than in the female, the teeth of the front tibia are much shorter, and the inner front claw is angularly dilated beneath.

♀. The terminal tooth of the front tibia is very long.

Length, 11–12 mm.; breadth, 6–7 mm.

BURMA: Rangoon (*Capt. A. K. Weld-Downing*), Yenang-yaung (*L. Fea*, May), Minhla (*Comotto*).

Type in the British Museum; co-types in the Genoa Museum.

134. **Anomala nilgirensis**, sp. nov.

Pale testaceous yellow, with the head and tarsi dark red, and a triangular patch on each side of the pronotum (the two patches frequently coalescing), the edges of the scutellum and elytra, a spot on the humeral callus and another on the apical callus, black.

This closely resembles *A. varicolor*, and perhaps varies to a similar extent in its colouring. In its form and sculpture, as in marking, it is almost the same, but it is rather more elongate, there is no trace of a third tooth upon the front tibia, and the pygidium is closely, sometimes rugosely, punctured. The dark marks upon the pronotum, which in *A. varicolor* rarely if ever extend to the base, in *A. nilgirensis* send backwards a pointed process which may reach the hind margin.

Length, 15–16 mm.; breadth, 8·5 mm.

MADRAS: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

135. **Anomala discors.**

Rhinoplia discors, Karsch, Berl. Ent. Zeits. 1882, p. 387.

Pale yellow in colour, with the head and tarsi red, and a spot or patch on each side of the pronotum and the extremities of the tibiæ brown. The humeral callus is usually also dark, and sometimes a vaguely darkened area extends backwards from it towards the ends of the elytra.

It is a small, oval and compact insect, smooth and shining, with only a very scanty clothing of pale hairs at the sides of the metasternum. The head is densely and finely rugose, except on the vertex, where it is closely punctured. The clypeus is broadly rounded. The pronotum is finely and moderately closely punctured, strongly and evenly rounded at the sides, narrowed in front, finely margined at the base, with the front angles not sharp and the hind ones very blunt. The scutellum is finely punctured, and the elytra are deeply punctate-striate, the subsutural interval broad and having a punctured stria similar to the rest, but disrupted in front and abbreviated behind. The pygidium is moderately punctured, and the metasternum densely at the sides and sparsely in the middle. The front tibia bears two strong teeth and the hind tibia is broad at its extremity. The longer claw of the front and middle feet is cleft.

♂. The dark markings are generally more developed than in the female, the club of the antenna is longer, and the lower lobe of the inner front claw a little dilated,

Length, 10–11 mm.; breadth, 6–6·5 mm.

CEYLON: Trincomali (*C. F. S. Baker*), Nilaveli (*C. F. S. Baker*, Sept.).

Type in the Berlin Royal Museum.

136. **Anomala variivestis**, sp. nov. (Plate III, figs. 20, 21.)

Testaceous yellow, with the clypeus, forehead and tarsi red, and a large patch on each side of the middle line of the pronotum (the two patches sometimes partly fused together), the extreme margins of the elytra (the sutural dark line dilating into a triangular patch round the scutellum), and sometimes the whole of the elytra, black or nearly black.

Oval in shape, convex and very smooth and shining. The clypeus and forehead are densely and rugosely punctured, the former short and broadly rounded, and the vertex strongly punctured. The pronotum is rather closely and evenly punctured, with the sides strongly rounded, the front angles slightly acute, the hind angles rounded and the base finely margined. The scutellum is finely punctured, and the elytra are deeply and closely punctate-striate, the second stria broken up in its anterior half into numerous large punctures. The pygidium is closely and rugosely punctured. The sides of the metasternum are closely punctured and thinly clothed with short erect hairs. The front tibia is armed with two strong teeth, the hind tibia is constricted before the extremity, and the longer claw of the front and middle feet is cleft.

♂. The teeth of the front tibia are very sharp.

♀. The terminal tooth of the front tibia is blunt and club-shaped.

Length, 13·5–14·5 mm.; breadth, 7–8 mm.

Assam: Manipur (*W. Doherty*); Burma: Maymyo (*H. L. Andrewes*).

Type in the British Museum; co-types in Mr. H. E. Andrewes' collection.

The specimens of the typical pale form are all from Assam and those of the dark phase with entirely black elytra are from Maymyo.

137. **Anomala bilobata.** (Plate II, fig. 18.)

Anomala bilobata, Arrow, Ann. Mag. Nat. Hist. (8) x, 1912, p. 329.

Testaceous, with the clypeus, hind tibiæ and all the tarsi reddish. The form is elongate and cylindrical. The head is small and deeply punctured, and the clypeus transverse, with the margin strongly reflexed and bilobed in front. The pronotum is very finely punctured, rounded at the sides, with the front angles nearly right angles, the hind angles very obtuse and the base finely margined and very gently rounded. The scutellum is finely punctured, and the elytra bear irregular rows of fine punctures, the 2nd interval being wide and irregularly punctured. The pygidium is rather rugosely but not deeply punctured. The metasternum is finely and densely punctured and clothed with fine yellowish pubescence. The front tibia is tridentate and the inner claw of the front tarsus is cleft.

♂. The inner front claw is very broad. The clypeus is shining, a little excavated on each side and the lobes pointed.

♀. The clypeus is rugosely punctured with the lobes blunt, and the apex of the front tibia is spatulate.

Length, 16–19 mm.: breadth, 7·5–9·5 mm.

Bengal: Calcutta, Murshidabad, Koolna (March—Ind. Mus.), Sarda (*F. W. Champion*), Pusa (*T. Bainbrigge Fletcher*, May); Burma: Tharrawaddy (*G. Q. Corbett*), N. Chin Hills, Bhamo, Teinzo (*L. Fea*, May, June), N. Shan States, Nam Kham, Tavoy (*W. Doherty*).

Type in the British Museum.

This insect, together with that which follows and *A. siamensis*, Nonfr., form a peculiar group distinguished by the bilobed clypeus and, in the male, by a form of ædeagus, the paramera of which end in transverse laminæ. *A. bilobata* is extremely like *A. siamensis*, of which Dr. Ohaus has kindly sent me for examination a typical male specimen, but it is a little more elongate and less stout. It is doubtful, however, if the absolute discrimination of the two is possible without examination of the genitalia, which are very different, the ædeagus of *A. bilobata* being longitudinally grooved and the two terminal laminæ meeting in a sharp angle behind. In that of *A. siamensis* both groove and angle are absent and the laminæ are larger and of a more irregular shape (see Ann. & Mag. Nat. Hist. (8) x, 1912, p. 331, fig. 2).

138. **Anomala fissilabris.** (Plate II, figs. 19, 20.)

Anomala fissilabris, Arrow, Ann. Mag. Nat. Hist. (8) x, 1912, p. 331.

Testaceous, with the hind tibiæ and tarsi black, and the remaining tarsi and the clypeus red.

The body is elongate and a little depressed. The head is small and strongly punctured, the clypeal margin strongly elevated and bilobed in front. The pronotum and scutellum are very minutely punctured, the former a little more strongly at the sides; the lateral margins are rounded, the front angles nearly right angles and the hind angles very obtuse. The elytra are very finely punctured, most of the punctures forming longitudinal rows, but with a wide irregularly punctured subsutural space. The pygidium is moderately punctured, and the metasternum finely rugose and clothed rather thinly with yellowish hairs. The front tibia is tridentate, the larger front claw cleft, and the middle femur bears a thick fringe of stiff hairs just before the posterior edge.

♂. The inner front claw is strongly dilated. The clypeus is a little excavated on each side and not densely punctured.

♀. The clypeus is densely punctured and the apical tooth of the front tibia long and blunt.

Length, 17–18 mm.; breadth, 9 mm.

Burma: Tharrawaddy, Prome (*G. Q. Corbett*), Minhla (*L. Fea*, May).

Type in the British Museum.

This species is extremely close to *A. bilobata*, but differs in its rather finer puncturation, the black hind tibiæ and tarsi, and the thick fringe of the middle femur.

139. **Anomala anguliceps**, sp. nov.

Pale testaceous yellow, with the head, hind tibiæ and all the tarsi red, and a fine black marginal line to the clypeus, scutellum and elytra. The teeth of the front tibia and the vertex of the head at the sides are also black.

It is elongate, cylindrical and convex, smooth above, but not very shining. The head is densely and moderately finely punctured, with the front margin of the clypeus straight, strongly reflexed and slightly angulated on each side. The pronotum is very finely and rather closely punctured, with the sides rounded, the front angles blunt, the hind angles very obtuse and the base completely margined. The scutellum is finely and moderately closely punctured, and the elytra are less finely and closely punctured, some of the punctures forming vague longitudinal lines, and the intervals everywhere very finely punctulated. The pygidium is rather closely punctured, the punctures coalescing transversely in the basal part and large and distinct towards the apex. The metasternum is clothed with fairly close but not long yellow hairs. The legs are moderately long, the front tibia armed with two strong teeth and a slight upper one, the hind tibia moderately long, and the longer claw of the front foot cleft.

♂. The apical tooth of the front tibia is rather sharp and the inner front claw is dilated.

Length, 21 mm.; breadth, 10·5 mm.

BURMA: Karen Hills (*W. Doherty*).

Type in the British Museum.

140. **Anomala tristis**, sp. nov.

Testaceous yellow, with the head and elytra black, the clypeus, pronotum (except the lateral margins), scutellum, pygidium and tarsi dark red or brown.

The body is rather elongate, parallel-sided and depressed in shape. The eyes are very large and prominent, the clypeus small and rugosely punctured, with the front margin straight and strongly reflexed. The forehead is deeply but not densely punctured, and the pronotum is also strongly and moderately closely punctured, with the sides regularly rounded, the front angles right angles, the hind angles very obtuse and the base finely margined. The scutellum is finely punctured, and the elytra are closely and deeply grooved, with close and deep punctures in the grooves. The pygidium is moderately deeply and closely punctured. The legs are stout, the front tibia armed with three teeth, of which the uppermost is feeble, the hind tibia a little constricted before the extremity, and the longer claw of the front foot only cleft.

♂. The club of the antenna is very long.
♀. Unknown.
Length, 11 mm.; breadth, 6 mm.
United Provinces: Dehra Dun (*Ollenbach*, Sept.); Sikkim: Darjiling (*G. Rogers*).
Type in the British Museum.

141. **Anomala madrasica**, sp. nov. (Plate IV, fig. 7.)

Chestnut-red, with broad lateral margins to the pronotum (dilating behind), the scutellum, the outer margins of the elytra vaguely, the pygidium, lower surface, antennæ, femora and tibiæ pale yellow.

It is ovate, moderately convex, and rather smooth and shining. The head is moderately closely and rather evenly punctured, with the eyes large and prominent, the clypeus small and nearly semicircular and its margin very strongly reflexed. The pronotum is finely and sparsely punctured, with a smooth median line, the sides strongly rounded, the front angles blunt, the hind angles very obtuse and the base finely margined. The scutellum is similarly punctured, and the elytra are very deeply punctate-striate, the second stria irregular, disrupted in front, the fifth and sixth composed of separate coarse punctures and all resolved into similar punctures anteriorly. The pygidium is rather sparingly punctured. The legs are not long, the front tibia is armed with two long sharp teeth, the hind femur is short and thick, the hind tibia stout and dilated at the end, the inner front claw is cleft and all the rest are simple.

♂. The club of the antenna is long, the eyes are very prominent, and the longer front claw is very unequally cleft.

I have not seen a female.
Length, 11 mm.; breadth, 6 mm.
Madras: Chittore (*N. S. Brodie*, July).
Type in the British Museum.

142. **Anomala pellucida.** (Plate II, fig. 28.)

Anomala pellucida, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911 p. 359.

Pale testaceous yellow, with the head (except an indefinite pale patch on each side of the clypeus), the extreme edges of the pronotum, scutellum, elytra and front tibiæ, the hind tibiæ and all the tarsi dark red.

It is rather broadly cylindrical in shape, and convex, smooth and shining above. The head is finely and densely rugose, with the anterior part of the clypeus and the hinder part of the vertex shining and distinctly punctured. The eyes are large and prominent, and the clypeus is short, with broadly rounded sides and strongly reflexed margin. The pronotum is finely, unevenly and moderately closely punctured, with the sides regularly rounded, the front angles acute, the hind angles very blunt and the base

finely and completely margined. The scutellum is finely but not evenly punctured, a little impressed, but not distinctly angulated, at the apex. The elytra bear seven strongly impressed and closely punctured dorsal striæ, the second one disrupted at the base, and the intervals are narrow, smooth and convex. The pygidium is finely, rather deeply and evenly punctured, and the metasternum is thinly clothed with short, very pale yellow hairs. The legs are rather long, the front tibia armed with two strong teeth, the hind tibia inflated near the base and constricted before the apex, and the inner front claw only is cleft.

♂. The antennæ are long, and the inner front claw is rather feebly dilated.

♀. The teeth of the front tibia are very long and far apart.

Length, 16–18 mm.; breadth, 9–10 mm.

Ceylon; Madras: Madura (*T. R. D. Bell*), Utakamand (*C. A. Barber*, April).

Type in the British Museum.

The general colour is very pale, and the abdomen of the dry specimens is peculiarly transparent.

143. **Anomala blanchardi**, nom. nov. (Plate II, fig. 29.)

Anomala testacea, Blanch. (*nec* Hope), Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 183.

Testaceous, with the head, a narrow sutural line, the hind tibiæ and all the tarsi dark red.

It is cylindrical in shape, rather short and broad, and moderately convex. The clypeus is rather lightly punctured, smooth and shining, and the forehead finely rugose. The pronotum is finely and closely punctured, smooth and shining. The scutellum is finely punctured, and the elytra are deeply and rather evenly punctate-striate. The front tibia is armed with two strong teeth, and the longer claw of the front foot only is cleft.

Length, 14 mm.

Madras: Pondicherry.

Type in the Paris Museum.

A single specimen only is known of this species, but the author seems to have associated with it a second specimen which, M. Lesne informs me, belongs to a different species. It is necessary to change the name on account of its previous employment by Hope for another Indian species.

144. **Anomala semiusta.** (Plate II, fig. 30.)

Anomala semiusta, Arrow, Ann. Mag. Nat. Hist. (8) x, 1912, p. 333.

Pale testaceous, with the head, pronotum (except the lateral margins), the sides of the scutellum and the elytral suture brown, and the clypeus, tibiæ and tarsi reddish. The head and pronotum have usually an exceedingly faint metallic lustre. The dark central mass of the pronotum is often divided into two by a pale median line.

Rather shortly cylindrical and parallel-sided, not very convex, with the clypeus small, nearly straight in front and finely rugose, and the forehead rugosely punctured. The pronotum is rather evenly but not strongly punctured all over, margined at the base, with the lateral margins and hind angles strongly and continuously rounded. The scutellum is well punctured, and the elytra are deeply punctate-striate, with the humeral and alternate dorsal intervals very wide and irregularly punctured, the punctures of the 4th interval becoming reduced upon the anterior half to a single row. The pygidium and metasternum are strongly and closely punctured and scantily hairy. There is no sternal process. The front tibia is tri-dentate and the inner claw of the front tarsus alone is cleft.

♂. The eyes are large, the clypeus very small, and the club of the antenna long. The three teeth of the front tibia are all well-marked and rather sharp.

♀. The eyes are a little smaller, the clypeus rather larger, the terminal tooth of the front tibia blunt and clavate and the third tooth feeble.

Length, 12–14 mm.; breadth, 6·5–7·5 mm.

BURMA: Teinzo (*L. Fea*, May).

Type in the British Museum.

145. Anomala infantilis.

Anomala infantilis, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 361.

Testaceous, with the head, the pronotum (except an irregular outer margin and generally a very narrow median line), the scutellum, and the basal and sutural margins of the elytra (dilating around the scutellum) black or brown. The clypeus, the extremities of the tibiæ and the tarsi are reddish.

The body is moderately elongate, rather parallel-sided and depressed. The head is strongly punctured, the clypeus small, with the front margin strongly reflexed and nearly straight in the middle. The eyes are large and the antennæ long. The prothorax is moderately finely and closely punctured; the lateral margins are strongly and regularly curved, the front angles acute and the hind angles not distinct. The scutellum is minutely punctured, and the elytra are strongly punctate-striate, the second stria being disrupted at the base and the fifth and eighth generally more or less irregular. The pygidium is strongly but not very closely punctured and bears a few long hairs. The sides of the metasternum are rather closely punctured and thinly pubescent, and the abdomen is coarsely punctured, each segment bearing a transverse row of stiff bristles. The front tibia is tri-dentate, and the inner front claw only is cleft.

♂. The inner front claw is dilated, but very acute, and the antennal club is very long.

Length, 9–10 mm.; breadth, 4·5–4·75 mm.

CEYLON: Madulsima (*T. B. Fletcher*, July, Dec.), Diyatalawa (*T. B. Fletcher*, Aug., Sept.), Kelani Valley (Andrewes Coll.), Kandy (*C. F. S. Baker*, April).

Type in the British Museum.

146. **Anomala mollis**, sp. nov.

Very pale yellow, with the forehead and vertex, the pronotum (except the lateral margins), the elytral suture, a vague spot upon the humeral callus, and the tibiæ and tarsi darker.

It is a very small species, moderately elongate, rather depressed, and not very shining above. The legs are long and slender. The head is finely and rather closely punctured, the clypeus very small, broadly rounded and nearly straight in front. The pronotum is irregularly and rather strongly punctured, with the sides strongly rounded, the front angles not sharp, the hind angles very blunt and the base finely margined. The scutellum bears a few punctures, and the elytra are deeply but unevenly punctate-striate. The pygidium is strongly punctured. The front tibia bears three teeth, the uppermost very minute, the hind tibia is slender, and the longer claw of the front foot only is cleft.

♂. The eyes are very large and prominent, the club of the antenna is long, and the legs are very slender.

Length, 8–10 mm.; breadth, 4–4·5 mm.

BURMA: Teinzo (*L. Fea*, May).

Type in the Genoa Museum; co-type in the British Museum.

147. **Anomala conformis.**

Anomala conformis, Walker,* Ann. Mag. Nat. Hist (3) iii, 1859, p. 56.

Orange-testaceous, with the forehead and a narrow sutural line upon the elytra dark, and the extremities of the tibiæ and the tarsi reddish.

Oval and convex in shape, smooth and rather shining, with a very scanty clothing of hairs beneath. The head is small, strongly punctured on the vertex, and rugosely upon the clypeus and the middle of the forehead. The eyes are rather large and prominent, and the clypeus short, with its margin curvilinear and well raised. The pronotum is finely but rather closely punctured, with the lateral margins rounded, the front angles not very sharp and the hind angles very blunt. The elytra are deeply and strongly punctate-striate, with the subsutural interval broad and strongly and irregularly punctured in front, the punctures reduced upon the posterior half to a single impressed line. The pygidium is rather strongly and closely punctured, the metasternum densely and the abdomen moderately closely. The front tibia is tri-dentate, the terminal tooth long and slender, the second strong and sharp, and the third very feeble. The longer claw of the front foot only is cleft. The hind tibiæ are rather inflated before the middle and constricted before the extremity.

Length, 10·5 mm.; breadth, 6·5 mm.

CEYLON.

Type in the British Museum.

Besides the type, I have seen only a single specimen (in M. René Oberthür's collection). Both are females.

148. **Anomala walkeri.** (Plate II, fig. 33.)

Anomala walkeri, Arrow, Trans. Ent. Soc. Lond. 1899, p. 271.
Anomala humeralis, Walker,* Ann. Mag. Nat. Hist. (3) iii, 1859, p. 56.

Bright testaceous yellow, with the head and tarsi reddish, the vertex, and frequently a very narrow sutural line and the posterior part of the outer edges of the elytra, black. The humeral calli are occasionally very slightly stained, but never exhibit a definite black spot.

The body is rather broad and convex. The head is small, but the eyes are large; the clypeus is short, nearly straight in front and rugose, and the forehead closely punctured. The pronotum is finely and moderately closely punctured, but less closely along the middle line, with the sides rounded, the front angles slightly acuminate and the hind angles obtuse, the base margined and scarcely prominent in the middle. The scutellum bears a few punctures, and the elytra are deeply striate-punctate, the second row of punctures disrupted in the anterior half. The pygidium is rather closely punctured. The lower surface is very scantily clothed with hair. The front tibia bears two strong teeth and an exceedingly feeble upper one, and the hind tibia is inflated in its upper half, strongly constricted posteriorly and dilated at the apex.

♂. The clypeus is smaller and the eyes are larger than in the female, the apical tooth of the front tibia is short and sharp, and the larger front claw a little thickened. The club of the antenna is very long.

♀. The form is shorter and broader, the hind angles of the prothorax more rounded, and the apical tooth of the front tibia longer and blunter than in the male. The antennal club is moderately long.

Length, 13–16 mm.; breadth, 8 mm.

CEYLON: Kandy (*C. F. S. Baker*, April), Colombo (*G. Lewis*, April), Peradeniya (*E. E. Green*, Feb.), Kelani Valley (*W. Braine*), Hambantota (*T. B. Fletcher*, Jan.), Maskeliya (*T. B. Fletcher*, March), Madulsima (*T. B. Fletcher*, May), Galboda (*E. E. Green*, Feb.).

Type in the British Museum.

149. **Anomala gravida.** (Plate II, fig. 32.)

Anomala gravida, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 360.

Testaceous, with the clypeus and tarsi reddish, and the forehead,

the suture and margins of the elytra, and a spot on each shoulder black.

The body is broadly cylindrical and not very convex. The clypeus and head are strongly and irregularly, the former rugosely, punctured. The clypeus is short, not very narrow, with the front margin broadly rounded and not very strongly reflexed. The pronotum is short, finely punctured, margined all round and gently rounded at the sides. The scutellum is finely punctured. The elytra are deeply punctate-striate, the second stria dividing in the anterior half. The pygidium and metasternum are rather strongly and closely punctured. The front tibia is tri-dentate, but the uppermost tooth is very feeble. The larger claw of the front foot only is cleft.

♂. The club of the antenna is rather long.

Length, 18 mm.; breadth, 10 mm.

CEYLON: Kelani Valley, nr. Colombo (*W. Braine*), Labugama (*E. E. Green*), Balangoda (*G. Lewis*, March), Kandy (*C. F. S. Baker*, April).

Type in the British Museum.

This species belongs to the *pallida* group and is closely allied to the preceding *A. walkeri*, Arrow, also a Ceylonese species, which is smaller and devoid of the black markings of *A. gravida*. It is still more like the S. Indian *A. communis*, Burm., but larger, with the eyes rather smaller and the clypeus less narrow.

150. **Anomala communis.** (Plate II, fig. 31).

Anomala communis, Burm. Handb. Ent. iv, 1, 1844, p. 236.

Testaceous yellow, with the vertex of the head, a spot on each shoulder (and usually one upon the apical callus of each elytron) and the extreme margins of the elytra black, the sutural margins dilated at the sides of the scutellum.

The form is depressed, but not broad, the clypeus is small and the eyes are large. The clypeus is rugosely punctured and nearly straight in front, and the forehead is finely punctured. The pronotum is finely and moderately closely punctured, but less closely along the middle; the sides are strongly rounded, the front angles nearly right angles, the hind angles obtuse, and the base finely margined and very feebly trisinuate. The scutellum is finely punctured, and the elytra are deeply and regularly punctate-striate, the second stria dividing near the scutellum. The pygidium is finely punctured, the metasternum finely and closely punctured, and the lower surface of the body thinly hairy. The front tibia bears two sharp teeth and a feeble upper one, and the hind tibia is a little constricted before the apex.

♂. The body is longer, flatter and more parallel-sided than that of the female, and the hind angles of the pronotum are more distinct. The antenna, and especially the club, is very long, the clypeus is still smaller than in the female and more hollowed, and the eyes are larger, the interval between them being less than

their combined diameter. The front tibiæ are broader, the teeth sharper and the terminal one much shorter and less oblique.

Length, 12–13 mm.; breadth, 6–7 mm.

BOMBAY: Belgaum (*H. E. Andrewes*); MADRAS: Nilgiri Hills (*H. L. Andrewes*), Cochin (Berlin Ent. Mus.), Utakamand (*C. A. Barber*), Coorg, Sanivarsandai, 4000 ft. (*T. V. Ramakrishna*, April), Sonawarpet, 5000 ft. (*Ramakrishna*, April).

Type in the Halle Museum.

151. **Anomala andamanica**, sp. nov. (Plate II, fig. 34.)

Testaceous, with the vertex of the head, two adjacent spots at the middle of the front margin of the pronotum (sometimes absent and sometimes fused into a single large patch), a spot on the humeral callus, an indistinct one on the apical callus, and the extreme margins of the elytra, black. The elytral margin is extremely narrow, but expands into a conspicuous patch round the scutellum. The tarsi and extremities of the tibiæ are deep brown.

The body is moderately elongate, rather parallel-sided and depressed. The head is strongly and closely punctured, and the clypeus rather small, with its margin strongly rounded at the sides but straight in the middle. The pronotum is finely but strongly and closely punctured, rounded at the sides and margined at the base. The scutellum is rather closely punctured, and the elytra are deeply punctate-striate. The pygidium is strongly and densely punctured. The metasternum is densely and the abdomen less closely punctured, and the clothing of the lower surface is exceedingly fine and sparse.

♂. The body is a little narrower than in the female, the eyes larger, the clypeus rather smaller, the antennæ very long and the front tibia broader, with very short and sharp teeth.

Length, 13–15 mm.; breadth, 6·5–7·5 mm.

ANDAMAN IS.; NICOBAR IS. (*Capt. Wimberley*, *Roepstorff*).

Type in the British Museum.

This species is extremely like *A. communis*, Burm., but the clypeus is not quite so small and the sculpture rather stronger. The pronotum is more closely punctured and therefore less shining; the black spot or spots upon it, when present, at once identify the species.

152. **Anomala latipes.**

Anomala latipes, Arrow, Ann. Mag. Nat. Hist. (8) x, 1912, p. 332.

Bright yellow, with the head behind the eyes, a spot on each shoulder and a broad sutural line extending to the base, black. A pair of black spots sometimes appears at the middle of the pronotum. The tarsi are reddish.

The body is rather cylindrical in shape, nearly parallel-sided and not very depressed. The clypeus is rugose, short and nearly straight in front, and the forehead is closely punctured. The

pronotum is finely and evenly punctured, with the sides rounded, the front angles acute, the hind angles very obtuse, and the base finely margined and very feebly trisinuate. The scutellum is punctured, and the elytra are deeply punctate-striate. The pygidium is evenly and fairly closely punctured. The lower surface of the body is very thinly hairy. The front tibia is strongly tridentate, the hind legs are short, with the femur broad, the trochanter long and not acute, the tibia broad and not inflated, nor constricted before the extremity.

♂. The inner anterior claw is unequally divided and the trochanters of the hind legs are long, nearly parallel-sided and rather prominent at the end.

♀. The black sutural line is broader than in the male, the forehead has a rugose area in front, the apex of the front tibia is spatulate, and the inner anterior claw almost equally divided.

Length, 14·5–16 mm.; breadth, 7·5–8 mm.

BURMA: Tharrawaddy (*G. Q. Corbett*), Cachin Hills.

Type in the British Museum.

A. latipes is very closely like *A. communis*, Burm., and *A. pallida*, F., but is narrower in shape, the black sutural line is broader, especially in the female, and the hind femora and tibiæ are shorter and broader.

153. **Anomala biharensis**, sp. nov. (Plate II, fig. 36.)

Pale testaceous yellow, with the head of the female, the extremities of the tibiæ, the tarsi, and the extreme margins of the clypeus, pronotum, scutellum, and elytra, brown.

It is smooth and shining, moderately elongate and not very convex. The eyes are large, the clypeus small, densely and rugosely punctured, with the front margin nearly straight; the forehead is finely and closely punctured. The pronotum is finely and rather closely punctured, with the sides rounded, the front angles acute, the hind angles very obtuse and the base finely margined. The scutellum is minutely punctured and each elytron bears seven finely punctured and not very deeply impressed dorsal striæ, the second disrupted at the base; the sutural angles are rounded. The pygidium is deeply and rather rugosely punctured. The front tibia is armed with three teeth, of which the uppermost is very feeble, the hind tibia is very short and stout and a little constricted before the end, and the longer claw of the front foot only is cleft.

♂. The head is pale, the eyes very large, and the longer front claw very unequally cleft.

♀. The body is stouter, the head red, with the clypeus nearly black, and the longer front claw nearly equally divided.

Length, 12–15 mm.; breadth, 7–8 mm.

BENGAL: Pusa (*T. Bainbrigge Fletcher*, April–June).

This species was bred from a larva found underground at the base of a Banyan tree and was also taken at light and at the base

of a Gullar tree. It differs from the allied species by its almost uniformly pale colour, without a black vertex, and by the rounded sutural angles of the elytra.

154. Anomala stenoptera, sp. nov. (Plate 11, fig. 35.)

Pale yellow, with the extreme edges of the elytra dark (the sutural edge most distinctly), and the tarsi reddish.

It is very long, narrow and parallel-sided and rather smooth and shining, with long and very stout legs. It is almost devoid of hairy clothing, but each ventral segment has a close fringe of stiff bristles, and the bristles of the tarsi are very long. The head and clypeus are moderately closely punctured, the latter small and broadly rounded. The pronotum is rather closely and evenly punctured, with the sides regularly rounded, the front angles nearly right angles, the hind angles very obtuse and the base completely margined. The elytra are strongly but unevenly punctate-striate, with a broad irregularly punctured subsutural interval. The pygidium is shining and rather coarsely but not closely punctured. The front tibia is tridentate, and the longer claw of the front foot only is cleft.

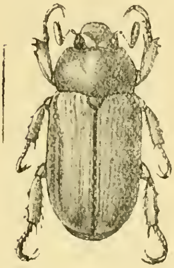

Fig. 42.—*Anomala stenoptera*, ♂.

♂. The club of the antenna is rather long, the tibiæ and tarsi are very thick, and the teeth of the front tibia very minute.

♀ unknown.

Length, 12–14·5 mm.; breadth, 5·5–6·5 mm.

Burma: Teinzo (*L. Fea*, May).

Type in the Genoa Museum; co-type in the British Museum.

155. Anomala antiqua.

Melolontha antiqua, Gyll., Schönh. Syn. Ins. i, 3, 1817, App. p. 111.
Melolontha lugubris, Wied., Zool. Mag. ii, 1, 1823, p. 93.
Euchlora ærea, Perty, Observ. Col. Ind. Or. 1831, p. 34; Hope, Ann. Nat. Hist. iv, 1840, p. 34.
Anomala antiqua, Burm., Handb. Ent. iv, 1, 1844, p. 282.
Anomala australasiæ, Blackb.,* Proc. Linn. Soc. N. S. Wales, (2) vii, p. 113.

Very dark metallic green or coppery above and beneath, or pitchy black beneath. The antennæ are red.

The shape is convex, moderately elongate and cylindrical. The entire sternum is clothed with rather short grey hairs, and the abdominal segments have bands of short golden hairs at the sides. The clypeus is densely granulated, with the margin rounded and strongly reflexed, and the forehead is finely and closely punctured. The pronotum is also finely and closely punctured, very closely at

the sides. The lateral margins are rounded, the front angles rectangular but not sharp, the hind angles rounded and the base entirely margined. The scutellum is finely punctured and the elytra rather less finely, but rather closely, and with the linear arrangement almost obliterated, the intervals being extremely minutely punctured. The pygidium is rather closely and the metasternum densely punctured, the latter sparingly in the middle. The mesosternum is not produced, and the front tibia is armed with three teeth. The larger claw of the front and middle feet is cleft.

♂. The front margin of the clypeus is rather more reflexed, and the inner branch of the inner front claw is very broad and blunt.

Length, 14–17 mm.; breadth, 8–8·5 mm.

NEPAL (*Maj.-Gen. Hardwicke*); BURMA: Minhla (*Comotto*), Thayetmyo (*E. Y. Watson*); HAINAN; HONGKONG; SIAM; TONKIN; ANNAM; MALAY PENINSULA; BORNEO; JAVA; TIMOR; NORTH AUSTRALIA.

Type in the Stockholm Museum; that of *M. lugubris* in the Copenhagen Museum, and that of *A. australasiæ* in the British Museum.

Although sometimes found in great numbers, the habits of this insect have not yet been recorded. It is the most widely distributed species of the genus, and the only one found in Australia.

156. **Anomala erosa.** (Plate II, figs. 41, 42.)

Anomala erosa, Arrow, Ann. Mag. Nat. Hist. (8) x, 1912, p. 334.

Testaceous, with the entire head, the disc of the pronotum (sometimes divided by a pale median line), the circumference or the whole of the scutellum, the inner and outer borders of the elytra, a vitta extending backwards from the shoulder, and the grooves and punctures of the elytra black, and with a very faint coppery or metallic green lustre upon the head and pronotum. The pygidium and underside of the body are either entirely pale or partly or entirely black, and the amount of dark pigmentation generally is extremely variable. The femora are usually pale, and the tibiæ and tarsi are more or less dark.

The body is oval, short, convex, and smooth and shining. The head is densely and finely punctured, with the clypeus short and its front margin strongly reflexed. The pronotum is finely and rather closely punctured, with the sides strongly rounded, the front angles slightly obtuse and the hind angles rounded away; the base is finely margined. The scutellum is finely punctured. The elytra are very deeply striated, with the striæ closely punctured, the primary dorsal costæ very narrow, the intermediate intervals very broad, the lateral ones strongly punctured all over and the dorsal ones with deep crowded punctures along the middle, the latter reduced to a single row posteriorly upon the 2nd (subsutural) interval and anteriorly upon the 4th interval. The pygidium is finely and subrugosely punctured, and the lower

surface is finely punctured and only very scantily hairy. There is no mesosternal process. The front tibia is tridentate and the longer claw of the front and middle feet cleft; the hind tibia is not strongly inflated or constricted.

♂. The inner front claw is very broad and divergently cleft, and the last abdominal segment is extremely short and only visible at the sides.

♀. The penultimate ventral segment is very broad and the last segment well developed.

Length, 11·5–14·5 mm.; breadth, 7–8·5 mm.

BURMA: Mandalay (June—Pusa Coll.), Shenmaga (*L. Fea*, June).

Type in the British Museum; co-types in the Genoa Museum.

This is closely related to *A. varicolor*, Gyll., of which it has the general appearance and type of coloration, as well as great variability in the degree of pigmentation.

Taken at light.

157. **Anomala vivida**, sp. nov.

Red-brown, with the upper surface, tibiæ and tarsi suffused with a brilliant golden-green lustre, the elytra generally becoming a little paler towards their extremities, and the apex of the pygidium, the lower surface of the body, the femora and antennæ reddish yellow.

Rather broadly oval in shape and only moderately convex. The eyes are very large and prominent, the clypeus small, with its margin strongly reflexed and nearly straight in front. The clypeus and forehead are rather finely rugose, and the vertex is strongly punctured. The pronotum is closely punctured but very shining, with its sides strongly curved, the front angles nearly right angles, the hind angles obtuse, and the base strongly trisinuated and completely margined. The scutellum is impressed at its apex and strongly punctured. The elytra are deeply but rather indefinitely punctate-striate, the subsutural interval being very broad, and deeply and rather coarsely punctured. The pygidium is coarsely transversely striolated. The sides of the metasternum are finely rugose and clothed with rather long, but not very thick, tawny hair. The front tibia is armed with two strong teeth, the hind tibia is inflated before the middle and rather dilated at the extremity, and the longer claws of the front and middle feet are cleft.

♂. The club of the antenna is very long, and the eyes are separated by a distance only about one and a half times their diameter.

I have not seen a female.

Length, 15–17 mm.; breadth, 7·5–8·5 mm.

ASSAM: Cachar.

Type in the British Museum.

This and the seven following species are known almost exclusively from male specimens, the females probably being sluggish and therefore rarely seen.

158. **Anomala procrastinator**, sp. nov.

Coppery, with the head and prothorax, and sometimes also the tibiæ, abdomen and pygidium, dark coppery green.

It is rather broadly ovate and depressed, with the entire upper surface very closely sculptured and scarcely shining, the metasternum thickly and the abdomen, pygidium and legs scantily clothed with pale yellowish hair. The head is densely rugose, the eyes very large and prominent, the clypeus very narrow (not much broader than the diameter of the eye as seen from the side) and its entire margin strongly reflexed. The pronotum is twice as broad as it is long in the middle, strongly and densely punctured, with the sides gently curved, all the angles rounded, and the base gently trisinuate and finely margined. The scutellum is moderately punctured, and the elytra are strongly sulcate, with the intervals narrow, convex and rugosely punctured; the membranous margin is rather broad at the extremities. The pygidium is very finely and densely coriaceous. The legs are moderately slender, the front tibia armed with two teeth, the upper one small, and the longer claw of the front and middle feet is cleft.

♂. The club of the antenna is longer than the footstalk and more than twice as long as the clypeus, and the lower lobe of the inner front claw is dilated.

The female is unknown.

Length, 13 mm.; breadth, 7·5 mm.

CEYLON: Weligama (*E. E. Green*, Dec.).

Type in the British Museum; a co-type in the collection of the Royal Botanic Gardens, Peradeniya.

It is not altogether impossible that this is *A. infixa*, Walker, but the type of that is unknown and in its absence there can be no sufficient certainty that the species really belongs to the genus or subfamily.

159. **Anomala luridicollis.**

Anomala luridicollis, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 482.

Pale yellow, with the head coppery or deep metallic green, and the pronotum, scutellum and tibiæ pale crimson with a metallic lustre. The lower surface and pygidium are clothed with rather long grey hair, and the pygidium is more or less brown in colour.

The body is rather elongate and parallel-sided, with its greatest width near the posterior extremity. The eyes are large, the clypeus small and rugose, with the margin strongly reflexed, and the forehead roughly and irregularly punctured. The pronotum is rather uniformly but not very closely punctured, with a trace of a median groove; it is short, with all the angles rounded off, the sides strongly curved, the base trisinuate and completely margined. The scutellum bears a few fine punctures. The elytra are moderately closely and regularly punctured in rows. The pygidium is

rather strongly but unequally punctured and thinly clothed with long erect grey hairs. There is no mesosternal process.

I have seen only male examples, in which the antennal club is very long, the front tibia is strongly bidentate, and the inner front claw dilated, very acute and minutely cleft at the outer edge.

Length, 11 mm.; breadth, 6 mm.

MADRAS: Shembaganur (*P. du Breuil*), Trichinopoli (*J. Castets*).

Type in the British Museum.

160. **Anomala ægrota**, sp. nov. (Plate IV, fig. 4.)

Pale testaceous yellow, with the head, pronotum, scutellum, tibiæ and tarsi a little darker, the head with a very faint crimson metallic suffusion.

It is ovate and moderately convex, with fine yellowish hair upon the metasternum and the end of the pygidium. The head is rugosely punctured, with the eyes very large and prominent. The clypeus is very small, the width scarcely greater than the diameter of the eye (seen from the side), rectangular, with the sides parallel and the front margin feebly curved and very strongly reflexed. The pronotum is finely and fairly closely punctured, with the sides strongly rounded, all the angles very blunt and the base finely margined. The scutellum is finely punctured, and the elytra are moderately finely punctured in rows, with a minute puncturing upon the intervals. The subsutural interval is irregularly punctured. The pygidium is finely and sparsely punctured and hairy at the apex, and more coarsely and rugosely punctured upon the remaining surface. The front tibia is armed with two strong sharp teeth, and the longer claw is cleft upon the front and middle feet.

♂. The club of the antenna is rather longer than the footstalk and its joints are widest in the middle and rather abruptly narrowed a little before the end.

♀ unknown.

Length, 11·5–12·5 mm.; breadth, 6–7 mm.

ASSAM: Jorhat (*Desenne*, April); SIKKIM: Gopaldhara, Rungbong Valley (*H. Stevens*).

Type in the British Museum.

161. **Anomala prænitens**, sp. nov.

Chestnut-red, with the lower surface, femora and antennal club a little lighter and the vertex of the head darker, the head and pronotum suffused with a slight metallic green lustre. The metasternum is clothed thickly, the abdomen thinly, and the pygidium still more thinly, with tawny hair.

The body is elongate-ovate in shape, stout and convex. The eyes are large and prominent, and their diameter, as seen from the side, about equal to the breadth of the clypeus or forehead. The latter is deeply and densely punctured, and the small clypeus

is nearly semicircular, finely and rather rugosely punctured, with the margins strongly reflexed. The pronotum is strongly and closely punctured, with the sides slightly curved in front, nearly straight from before the middle, and all the angles very obtuse, the base being completely margined. The scutellum is finely punctured. The elytra are punctate-striate, with the entire surface finely but not closely punctulated; the subsutural interval is broad, and irregularly and rugosely punctured, and the third, fifth and seventh intervals are narrow and slightly elevated. The pygidium is feebly striolated.

♂. The club of the antenna is as long as the footstalk and twice as long as the clypeus. The legs are slender, the front tibia armed with two sharp teeth, the hind femur rather thick; all the claws are slender, sharp and undivided, the inner front claw having an angular flange at its lower edge.

♀ unknown.

Length, 12–15 mm.; breadth, 6·5–7·5 mm.

Assam: Tejpur.

Type in the British Museum.

One specimen has been received from the Pusa Agricultural Research Institute, and M. Oberthür has two, formerly in the collection of H. W. Bates.

162. **Anomala stenodera**, sp. nov.

Very dark red-brown, a little paler upon the elytra, and with the pronotum very feebly suffused with a greenish metallic lustre. The antennæ are yellowish.

Elongate-oval in shape and narrow in front, with the metasternum and the sides of the abdomen clothed with rather long tawny hair. The eyes are very large and prominent, separated by a distance less than twice their diameter, and the clypeus is very narrow, hollowed and rather scantily punctured. The forehead and vertex are evenly punctured and a little more strongly than the clypeus. The pronotum is rather narrow and strongly and closely punctured, especially at the sides, which are obtusely angulated before the middle, and the front and hind angles are also obtuse, the base being completely margined. The scutellum is strongly punctured, and the elytra are deeply punctate-striate, the second stria becoming disrupted in its anterior half and the fifth interval broad with a few irregular punctures behind; the marginal membrane is rather broad and conspicuous at the extremity. The pygidium is strongly and closely punctured. The front tibia is armed with two very sharp teeth, the hind tibia is short and stout, and the longer claw of the front and middle feet is minutely cleft at the tip.

♂. The antennal club is very long, the eyes are very large, and the inner front claw is abruptly lobed near the base.

Length, 14–15 mm.; breadth, 8 mm.

Bhutan (*Capt. Pemberton*); Assam: Tejpur (*Desenne*), Jorhat (*Desenne*, May).

163. **Anomala macrophylla.**

Melolontha macrophylla, Wiedemann, Zool. Mag. ii, 1, 1823, p. 91.
Anomala rugipennis, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850) p. 182.

Bright testaceous yellow, with the head, pronotum, scutellum, tibiæ and tarsi orange, the sides of the pronotum paler.

The body is stoutly built, convex, ovate and rather thinly clothed beneath with bristly yellow hairs. The head is densely punctured, and the clypeus small, transversely rectangular in shape, but with the front angles strongly rounded and the margin strongly reflexed. The pronotum is very convex and finely and closely punctured, with the sides strongly curved, all the angles obtuse and the base finely margined. The scutellum and elytra are finely and rather closely and rugosely punctured, and the latter are deeply longitudinally sulcate, with scarcely perceptible punctures in the sulci, the intervals convex, except the sub-sutural one, which is broad and has a row of large irregular pits along the middle. The pygidium and the sides of the metasternum and abdomen are finely rugulose. The front tibiæ are bidentate, and the longer claw of the front and middle tarsi is very minutely cleft. The outer front claw is scarcely shorter than the inner one and has a slight internal dilatation which does not reach the tip, giving it the shape of a parrot's bill.

♂. The club of the antenna is extremely long, and the eyes are very large and prominent, the intervening space being little wider than the diameter of one of the eyes. The teeth of the front tibia are short and sharp, and the cleavage of the inner claw is so minute that the outer division is frequently lost.

♀. The eyes have little more than half the diameter of those of the male.

Females appear to be rare, as I have seen only one (in the Indian Museum Collection).

Length, 13–15 mm.; breadth, 7–8 mm.

E. BENGAL: Dacca (*H. E. Stapleton*, Dec.), Damukdia (June), Maldah (*E. T. Atkinson*).

Type in the Copenhagen University Museum; that of *A. rugipennis* in the Paris Museum.

164. **Anomala euops**, sp. nov. (Plate IV, fig. 3.)

Pale yellow, with the forehead, the pronotum (except at the sides), scutellum, elytral suture, pygidium, tibiæ and tarsi reddish, occasionally with a slight metallic lustre. The sternum is rather thickly clothed, the abdomen thinly and the pygidium still more thinly, with erect yellow hair.

The body is short, compact and convex, and the legs are slender. The eyes are very large and prominent and about equal in diameter, as seen from above, to the interval between them. The clypeus is very small, not much wider than it is

long, its breadth about equal to the diameter of the eye as seen from the side; it is rounded, smooth and shining, rather finely punctured, with the margin strongly reflexed all round. The forehead is rather rugosely punctured. The pronotum is short, broad and finely punctured, but a little more coarsely and less closely at the sides, which are strongly rounded, the anterior angles obsolete, the hind angles obtuse and the base finely margined. The scutellum is finely punctured, and the elytra are shining, but rather closely punctured in rows, with the alternate intervals wider and irregularly punctured. The pygidium is finely transversely rugulose.

Fig. 43.
Anomala euops, ♂.

♂. The club of the antenna is longer than the footstalk and more than twice the length of the clypeus. The front tibia bears two sharp teeth, the hind femur is rather thick, all the claws are long, sharp and undivided, and the inner front one is dilated.

♀ unknown.

Length, 9–12 mm.; breadth, 4·5–7 mm.

Bengal: Pusa (*T. Bainbrigge Fletcher*).

Type in the British Museum.

Attracted by light (July to Oct.).

165. **Anomala propinqua.** (Plate III, fig. 24.)

Anomala propinqua, Arrow, Ann. Mag. Nat. Hist. (8) ix, 1912, p. 77.

Coppery, with the elytra chestnut, slightly metallic, the sides of the pygidium and of the abdominal segments having more or less distinct paler spots, those on the pygidium generally uniting to form a wavy line. The sternum is thickly clothed with long tawny hairs, and there are a few similar hairs on the vertex of the head and the apex of the pygidium.

The body is slightly elongate, broadest near the extremity, and convex. The head is densely rugose and opaque, and the clypeus transverse, with the front margin gently rounded. The pronotum is completely margined and minutely punctured, the punctures being fairly close in the middle and rather dense at the sides; the lateral margins are obtusely angulated in the middle, the front angles are sharp, the hind angles blunt but a little produced, and the base is trisinuate. The scutellum is finely punctured and has a short linear impression on each side. Each elytron has a deep sutural stria and four paired striæ enclosing elevated costæ, and the intervening spaces are flat and strongly and irregularly punctured. The pygidium is finely, and at the sides densely and rugosely, punctured. The mesosternum is not produced, the front

tibia is bidentate, and the larger claw of the front and middle feet is cleft.

♂. Rather less elongate than the female; the front tibial teeth are sharper, the front tarsi thickened, and the larger claw broad and abruptly bent. The longer spur of the hind tibia is slender and clubbed at the end.

Length, 16–18 mm.; breadth, 9–9·5 mm.

ASSAM: Sylhet, Cachar; SIKKIM: Darjiling; UNITED PROVINCES: Jolikote (June).

Type in the British Museum.

This species, although different in colour and in the sculpture of the elytra, has evidently a peculiarly close relationship to *A. anthracina*, the pale marks upon the pygidium and the curiously shaped spur of the hind tibia of the males being identical in the two.

It was taken upon a chestnut-tree at Jolikote.

166. **Anomala anthracina.** (Plate III, fig. 23.)

Anomala anthracina, Arrow, Ann. Mag. Nat. Hist. (8) ix, 1912, p. 76.

Black, with a very feeble metallic lustre above, especially visible upon the head and pronotum, the mouth and antennæ dull red, and the sides of the pygidium and abdominal segments exhibiting spots of the same colour, those of the pygidium generally uniting to form a wavy line. The sternum is thickly clothed with long tawny hair, and the vertex of the head and apex of the pygidium bear a few similar hairs.

The body is stout and convex, not long, widest near the extremity. The head is densely rugose and opaque, and the clypeus transverse and very gently curved at the front margin. The pronotum is minutely punctured, rather densely at the sides, but more scantily on the disk; it is entirely margined, the sides are rounded, the hind angles well marked and the base rather prominent in the middle. The scutellum is scarcely punctured, but generally bears an impressed line on each side. The elytra are deeply and rather evenly sulcate internally, less deeply and more irregularly punctate-striate externally. The pygidium is finely and densely punctate-rugose. The mesosternum is not produced, the front tibia is bidentate, and the larger claw of the front and middle tarsi is cleft.

♂. The body is shorter, the front tibial teeth sharper, the front tarsi thickened and their larger claw very broad. The longer spur of the hind tibia is slender, but clubbed at the end.

Length, 14–16 mm.; breadth, 8–9·5 mm.

SIKKIM: Kurseong, 6000 ft. (*E. A. D'Abreu*, *R. Verschraeghen*), Mungphu (*E. T. Atkinson*), Darjiling (*Harmand*); BHUTAN: Maria Basti (*L. Durel*).

Type in the British Museum.

167. **Anomala fulvohirta.**

Anomala fulvohirta, Arrow, Ann. Mag. Nat. Hist. (8) xvi, 1915, p. 231.
Anomala peninsularis, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 483.

Coppery, with the pronotum and pygidium generally darker and more green, their lateral margins, as well as the lower surface of the body and the femora, yellow, the tibiæ and tarsi reddish brown.

Compactly oval, convex and moderately shining. The head and clypeus are densely and rugosely punctured, the latter rather small and broadly rounded in front, and the eyes large and prominent. The pronotum is evenly and moderately strongly punctured, its sides are rounded, with the front angles rather blunt, the hind angles slightly obtuse but well marked, and the base very gently trisinuate, with a margin defined in the middle by irregular punctures, but not by a stria. The scutellum bears a few fine punctures. The elytra are strongly and closely punctured, most of the punctures forming longitudinal rows, but with a broad subsutural space which is irregularly punctured. The pygidium is microscopically rugose. The metasternum is densely punctured and thickly clothed with tawny hair, and the abdomen is finely and sparingly punctured, with a few setæ only. The mesosternum is not produced. The front tibia is strongly bidentate, and the larger claw of the front and middle tarsi cleft.

♂. The inner anterior claw is broad, sharply angulated near the base and acute at the tip.

Length, 14·5–16·5 mm.; breadth, 8–9·5 mm.

MADRAS: Shembaganur (*P. du Breuil*).

Type in the British Museum.

This has a rather close affinity with *A. discalis*, Walker, but is a little larger and more elongate, with less deeply striated elytra and much more closely and finely sculptured pygidium.

168. **Anomala discalis.**

Anomala discalis, Walker,* Ann. Mag. Nat. Hist. (3) iii, 1859, p. 56.

Testaceous, with a faint metallic suffusion, and with the forehead and vertex, the pronotum, except the lateral margins, the scutellum, elytra, hind tibiæ, and all the tarsi mahogany-red or brown. The pygidium is dark metallic green, with the exception of the sides and apex, which are pale yellow.

It is oval in shape, rather broad behind, moderately convex and not very shining. The head is closely and very deeply punctured, with the clypeus small and its front margin straight, the eyes prominent but not very large. The pronotum is similarly strongly and evenly punctured, with the sides regularly curved, all the angles blunt and the base completely margined. The scutellum is strongly but not closely punctured, and the elytra

are very strongly and deeply sulcate, with the sulci rather indefinitely punctured, the primary costæ narrow and convex, and the intervening (second and fourth) intervals strongly and confluently punctured. The pygidium is coarsely transversely rugose and fringed with long hairs at the apex. The mesosternum is not produced, and the metasternum is densely punctured and clothed with not very long or thick yellow hair. The front tibia is bidentate, the hind tibia moderately slender, not inflated or constricted, and the longer claw cleft on the front and middle feet.

♂. The antennæ are moderately long, the teeth of the front tibia are not strong or sharp, and the lower lobe of the inner front claw is dilated.

Length, 13 mm.; breadth, 7 mm.

CEYLON.

Type in the British Museum.

The type remains the only known specimen of this species. Only the clypeus, pygidium and parts of the legs of this specimen show a slight metallic lustre, but it is possible that it is not quite normal and that others will prove to be more deeply and brilliantly coloured.

169. **Anomala dilatata**, sp. nov.

Light chestnut-brown, with the lateral margins of the pronotum, the pygidium, lower surface and femora pale yellow, the head, pronotum and scutellum having a light metallic green suffusion.

The shape is shortly oval, with the pronotum rather narrow and the elytra regularly dilating from the shoulders to near the extremities. It is compact and convex, only moderately shining above, with the legs and sternum clothed with rather long and thick yellow hair. The head is densely rugose, with the clypeal margin strongly reflexed, rounded at the sides and nearly straight in front. The pronotum is rather strongly and closely punctured, with the sides evenly rounded, the front angles nearly right angles, the hind angles rounded and the base completely margined. The scutellum is well punctured, and the elytra bear a sutural line and two dorsal pairs of lines of strongly impressed punctures, the interval between the latter bearing a row of punctures disrupted behind, the subsutural and humeral intervals very broad and strongly and irregularly punctured. The pygidium is transversely striolated and bears a few long erect hairs towards its extremity. The tibiæ are short, the front ones armed with two strong teeth, the hind ones dilated at the extremity. The longer front and middle claws are cleft.

♂. The club of the antenna is as long as the footstalk, and the inner front claw is short, broad and strongly angulated at its lower edge.

I have not seen a female.

Length, 12–14 mm.; breadth, 7–7·5 mm.

BURMA: Tenasserim Mts., Siam border (*K. G. Gairdner*, Feb.–May).

Type in the British Museum.

170. Anomala ignicollis.

Anomala ignicollis, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 191.

Blood-red, with the head darker, the pronotum suffused with a slight metallic lustre, and the legs, the lower surface and the extremity of the pygidium clothed with rather long tawny hair.

It is a short, compact, highly convex and shining insect. The head is small and densely rugose, the clypeus broadly rounded and the suture well marked. The pronotum is minutely and rather evenly punctured, with the sides rounded, the base completely margined and broadly rounded, and all the angles obtuse. The scutellum is broader than it is long, obtuse at the apex, and bears a few punctures. The elytra are rather strongly punctate-striate, with the alternate intervals broad and irregularly punctured. The pygidium is closely, rather finely and rugosely punctured, a little less closely at the apex, where it bears a few tawny hairs. The sternum is closely, and the abdomen thinly, hairy. The longer claw of the front and middle feet is cleft only at the tip.

♂. The last joint of the front tarsus is deeply notched near the base, and the inner claw is strongly bent near the base, afterwards straight, parallel-sided and slightly cleft at the tip.

Length, 13–15 mm.: breadth, 7·5–9 mm.

MADRAS: Nilgiri Hills, Utakamand (*C. A. Barber*, April), Pondicherry.

Type in the Paris Museum.

171. Anomala dorsopicta.

Anomala dorsopicta, Arrow, Ann. Mag. Nat. Hist. (8) x, 1912, p. 335.

Bright testaceous yellow, with the head and tarsi reddish, and the forehead (except a triangular excision in front), a longitudinal bar on each side of the pronotum (extending from front to hind margin and emitting an external branch at the middle), and the elytra (except an oblique oval patch a little before the middle of each) black. The head and prothorax have generally a very slight metallic lustre.

Fig. 44.
Anomala dorsopicta.

The shape is elongate-oval, moderately broad and not very convex. The head is strongly and rather evenly punctured, with the clypeus short, rounded at the sides and strongly reflexed at the edge. The pronotum is rather finely but regularly punctured, strongly rounded at the sides, margined and trisinuate at the base, with the hind angles very obtuse. The scutellum is punctured and the elytra are deeply punctate-striate, with the intervals narrow and convex, and the

outer edge flattened for a short distance behind the shoulder. The pygidium is evenly punctured and the sides of the metasternum rugosely punctured and very thinly clothed with short hair. The front tibiæ are strongly bidentate, and the larger claw of the front and middle feet is cleft.

♂. The forehead and clypeus are shining, and the inner lobe of the cleft anterior claw is broad.

♀. The forehead and clypeus are more densely punctured and scarcely shining, and the dilated margins of the elytra are thickened.

Length, 13–14 mm.; breadth, 7–8 mm.

Burma: Tharrawaddy, Taung-ngu, Prome (*G. Q. Corbett*), Bhamo Hills, 4000 ft. (*F. M. Mackwood*, May).

Type in the British Museum.

172. **Anomala fallaciosa**, sp. nov. (Plate III, fig. 22.)

Testaceous yellow, with the head a little darker, the vertex on each side, the humeral calli and a narrow marginal line entirely surrounding the elytra brown or black; the tarsi are also dark. The anterior part of the upper surface is faintly suffused with a metallic lustre, which is not very apparent but constitutes an important distinctive feature.

It is shining, oval in form and not very convex, and the legs are rather short and stout. The head is rugosely punctured, except upon the vertex, which is strongly and not very closely punctured, the eyes are large and prominent and the clypeus very short and broadly rounded. The pronotum is moderately finely and closely punctured, with the sides strongly rounded, the front angles acute, the hind angles rounded and the base completely margined. The scutellum is finely punctured, and the elytra bear seven deep equidistant and closely punctured dorsal striæ, the second disrupted at the base. The pygidium is moderately strongly and closely punctured, and the metasternum is thinly clothed with short erect hairs. The front tibia is armed with two strong and rather closely approximated teeth, the hind tibia is short and broad, but a little narrowed at the extremity, and the longer front and middle claws are cleft.

♂. The club of the antenna is moderately long, the front tibia is short and broad, and the front tarsus rather short and thick.

♀ unknown.

Length, 13 mm.; breadth, 7 mm.

Burma: Tharrawaddy (*G. Q. Corbett*).

Type in the British Museum.

I know only the unique type specimen presented by Mr. H. E. Andrewes to the British Museum. The species is remarkable for its close resemblance to *A. communis*, Burm., with which in its general aspect and coloration it is identical. A rather close examination is necessary to detect the very slight metallic lustre which shows it to belong to a different group and this is

correlated with a different claw-structure, the longer front claw only being cleft in the species of the *communis* group, while here those of both front and middle feet are cleft in the male, and probably also in the female. The nearest ally of *A. fallaciosa* is *A. marginipennis*, but in that species the male has the claws as in *A. communis* and the female as in *A. fallaciosa*. The present species may be further distinguished from *A. communis* by its shorter and broader clypeus, bidentate front tibia, the obsolete hind angles of the prothorax and, in the male, by the smaller eyes and shorter antennal club.

173. Anomala marginipennis. (Plate II, fig. 37.)

Anomala marginipennis, Arrow, Ann. Mag. Nat. Hist. (8) ix, 1912, p. 78.

Pale testaceous, with the head between the eyes, a narrow marginal line entirely encircling each elytron and a humeral spot black, and the tarsi red. The upper surface is suffused with a faint metallic lustre, which is scarcely apparent except upon the forehead and the narrow black margins.

The form is moderately long, rather depressed and parallel-sided. The head is entirely, closely and strongly punctured, with the clypeus very short and the eyes large and prominent. The pronotum is everywhere closely punctured, completely margined, with the front angles sharp, the hind angles rounded away and the base trisinuate. The scutellum is irregularly punctured and the elytra are deeply punctate-striate, the second stria breaking up in the anterior half. The pygidium is strongly and rather closely punctured, the metasternum finely punctured and thinly pubescent. The front tibia is bidentate, and the middle and hind tibiæ are stout and not dilated at the end.

♂. The clypeus is very small and yellow in colour, the yellow extending angularly backwards between the eyes. The club of the antenna is moderately long, and the longer claw of the front foot only is cleft.

♀. The clypeus is rather larger and of a dark red colour. The eyes are smaller, the terminal tooth of the front tibia long and blunt, and the longer claw of the middle and hind feet minutely cleft at the tip.

Length, 14–16 mm.; breadth, 7–8 mm.

ASSAM: Khasi Hills, 3000–5000 ft., Jorhat (*Desenne*), Patkai Hills (*W. Doherty*); NEPAL; SIKKIM: Gopaldhara, Rungbong Valley (*H. Stevens*), Mungphu (*E. T. Atkinson*); BENGAL: Buxar Duars (*D. Naoroji*).

This species has a remarkably deceptive resemblance to *A. communis*, Burm., and its immediate allies, and a close examination is necessary to reveal the fact that it really belongs to a different section of the genus. The metallic suffusion is extremely faint, but its significance is confirmed by the complete absence of a third tooth to the front tibia, much shorter male antennal club

than in *A. communis*, etc., and above all by the cleft middle claw of the female.

The representatives from Sikkim and Assam, respectively, really form two distinct races, as shown by the two forms of ædeagus of the males, but as I have found no external difference I have followed the principle explained in the Introduction and treated them as one.

174. **Anomala viridilatera**, sp. nov.

Golden yellow, with the forehead and vertex, the pronotum (except the lateral margins), and the tarsi dark coppery green, the elytra coppery, with the external margins vivid peacock-green, and the scutellum and the outer face of the tibiæ also of the latter colour. The abdomen is slightly yellowish.

The body is moderately elongate in shape, rather broad behind and not very convex. The head is small, rugosely punctured, with the clypeus short and straight in front. The pronotum is shining, finely and sparsely punctured, with the sides strongly and evenly rounded, the front angles acute, the hind angles obtuse, and the base entirely and strongly margined. The scutellum is very short, semicircular (not pointed) and bears a few punctures. The elytra have each two strongly elevated discoidal costæ, bordered by strongly impressed longitudinal lines of large punctures, with wide and coarsely and irregularly punctured intervals. The pygidium is smooth and shining, rather sparsely and feebly punctured. The pronotum is produced behind the front coxæ into a sharp vertical knife-like process. The sides of the metasternum are finely punctured and clothed with very fine inconspicuous pale hair. The legs are stout, the front tibiæ armed with two sharp teeth, the hind tibia stout and not long, and the longer front and middle claws cleft.

♂. The club of the antenna is long, and the inner front claw is unequally cleft, but not noticeably dilated.

Length, 12 mm.; breadth, 6·5 mm.

BENGAL: Buxar Duars (*D. Naoroji*, May); SIKKIM: Gopaldhara, Rungbong Valley (*H. Stevens*).

Type in the British Museum.

This is like no other Indian species known to me, but is related to the Japanese *A. difficilis*, Waterh.

175. **Anomala birmana.**

Pseudosinghala birmana, Heller,* Deutsche Ent. Zeits. 1891, p. 297 (♂).
Pseudosinghala rugosifrons, Heller,* l. c. (♀).

Pale testaceous yellow, with a faint metallic lustre, and with the head, a large patch occupying the whole centre part of the pronotum and usually extending in the middle to the base, the basal and lateral margins of the elytra, and an intra-apical spot

upon each, dark brown or black. The pygidium is generally decorated with a dark spot on each side, and the front tibiæ and all the tarsi are usually also dark, but all the dark parts are liable to reduction or extension, and the upper surface may be wholly pale, or wholly dark, with the exception of the sides of the pronotum and the scutellum.

It is a stout, compact and convex insect, very shining and almost devoid of hair. The head is finely and densely rugose, and the clypeus shortly semicircular. The pronotum is rather finely and closely punctured, with the sides strongly curved and the base gently and uniformly curved, and without a marginal stria. The scutellum is much broader than it is long and well punctured. The elytra are strongly punctured in nearly uniform and equidistant rows, and strongly separately rounded at the end. The pygidium is strongly, and at the base rather confluently, punctured. There is no sternal process. The front tibia is strongly but not acutely bidentate, the hind tibia is short and stout, and the longer claw of the front and middle feet is cleft.

♂. The club of the antenna is as long as the footstalk, and the lower lobe of the longer front claw is very broad.

Length, 5·5–6 mm.; breadth, 3–3·5 mm.

BURMA: Karen Hills (*W. Doherty*), Meekalan Hills (*L. Fea*, March).

Types (♂ and ♀) in Capt. Moser's collection.

176. Anomala hamifera.

Omaloplia hamifera, Walker,* Ann. Mag. Nat. Hist. (3) iii, 1859, p. 56.

Pale testaceous, with a slight metallic lustre, and with the vertex of the head, the entire middle part of the pronotum (divided into two by a narrow pale line) and a small elongate mark near each lateral margin, the elytral suture (very narrowly), a short transverse bar crossing the suture before the middle, an abrupt dilatation of the posterior extremity of the sutural line, continued round the outer margin to the shoulder (interrupted behind the latter by an oblique pale mark), and usually a spot at the base of the pygidium on each side, black or dark brown. Parts of the sternum and abdomen, the tarsi and the inner surface of the four posterior tibiæ are also dark-coloured.

Fig. 45.—*Anomala hamifera.*

This is one of the smallest species of the genus. It is short, broad behind and not very convex. The clypeus is finely punctured, short and broad, with the front margin nearly straight and well reflexed. The forehead is rather more strongly and closely punctured. The pronotum is strongly transverse and rather

strongly punctured, with the sides evenly rounded, the front angles obtuse and the hind angles nearly obsolete; the base is gently and almost uniformly rounded and bears an impressed marginal line. The scutellum is scarcely punctured, and the elytra have six deep and coarsely punctured dorsal striæ, the second interval being coarsely and confluently punctured. The pygidium is coarsely punctured. The mesosternum is not produced; the front tibia is bidentate, the hind tibia stout and scarcely constricted, and the longer claw of the front and middle feet is cleft.

♂. The club of the antenna is as long as the footstalk.

Length, 5–6 mm.; breadth, 3 mm.

Ceylon: Hakgala (*E. E. Green*, March).

Type in the British Museum.

177. **Anomala mus.** (Plate III, fig. 30.)

Anomala mus, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 485.

Pale yellow with the posterior part of the head, the pronotum (except a lateral border, enclosing a dark spot, and a narrower front and hind border, and sometimes an incomplete narrow median line), the extreme edges of the elytra and a humeral spot on each, two spots on each side of the pygidium, the lower surface and parts of the legs, coppery- or greenish-black.

A variety occurs in which the dark-coloured areas have extended, and broad longitudinal dark bands appear at the suture and sides of the elytra and from the shoulder to the apex, leaving only a narrow thoracic margin, the scutellum and two ill-defined stripes on each elytron pale. The Madura specimens are all of this variety.

It is small, ovate, and only sparingly hairy beneath. The head is rugose and the clypeus rather broadly rounded. The pronotum is very shining, strongly, rather evenly but not thickly punctured; the sides are strongly rounded, the front angles nearly right angles, the posterior angles very obtuse, and the base gently rounded, with a marginal line which is almost obsolete in the middle. The scutellum bears a few punctures, and the elytra are rather strongly punctured in impressed rows. The pygidium is coarsely and rather rugosely punctured. The mesosternum is not produced. The metasternum is strongly punctured and thinly hairy at the sides, and the abdomen strongly but sparsely punctured. The front tibiæ are strongly bidentate, and the larger claw of the front and middle feet cleft.

♂. The inner front claw is broad, acute and minutely cleft at the upper edge.

Length, 6·5–8·5 mm.; breadth, 4–5 mm.

Madras: Nilgiri Hills, 6000 ft. (*H. L. Andrewes*), Shembaganur.

Type in the British Museum; co-types in Mr. H. E. Andrewes' collection.

Males of this little species were found by Mr. Andrewes flying in swarms over grass during the daytime, but the female is apparently rare.

178. **Anomala pomona**, sp. nov.

Testaceous, with a metallic green suffusion, and with the head, the pronotum (except the lateral margins), the scutellum, a broad common sutural band upon the elytra (not quite reaching the posterior margins), parts of the lower surface, the hind tibiæ and all the tarsi dark.

It is oval in shape, convex and shining. The head is closely rugose, with the clypeus broadly rounded. The pronotum is rather unevenly and finely punctured, a little more coarsely at the sides, which are strongly rounded, the front angles are right angles, the hind angles very obtuse and the base finely margined. The scutellum is very finely punctured, and the elytra bear rather even and equidistant lines of moderately fine close punctures, the second row disrupted at the base. The pygidium is rather coarsely and rugosely punctured. The front tibia is armed with two strong teeth; the hind tibia is short and stout and a little constricted before the extremity; the longer claw of the front and middle feet is cleft.

♀ unknown.

Length, 11·5 mm.; breadth, 6·5 mm.

Bombay: Kasana, Igatpuri (July—Pusa Coll.).

Type in the British Museum.

179. **Anomala dalbergiæ**, sp. nov.

Testaceous, with a metallic suffusion, which is deep fiery red in the male and pinkish or greenish golden in the female. The tarsi in both sexes are brown.

It is a small oval species, convex above and very smooth and shining. The legs are short and stout. The head is granulated, the clypeal margin rounded at the sides and nearly straight in the middle. The pronotum is irregularly, sparingly and very finely punctured, but with coarser punctures towards the sides, which are gently rounded, the front angles acute, the hind angles obtuse and the base completely margined. The scutellum bears only a few minute punctures, and the elytra are rather deeply and coarsely striate-punctate; the second (subsutural) interval bears an incomplete row of punctures, and the fourth is broad behind, where it bears a few scattered punctures; the membranous margin is rather broad. The pygidium is striolated (not very finely). The front tibia is armed with two strong teeth, the hind tibia is dilated in the middle, and the longer claw is cleft at the tip in the front and middle feet.

♂. The teeth of the front tibia are short, but very sharp, and the longer front claw is very broad. The colour, as stated above, is deeper in the male than in the female.

Length, 7–8 mm.; breadth, 4·5 mm.

MADRAS: Nilambur (*P. M. Lushington*).

Type in the British Museum; co-types in the Forestry Research Institute, Dehra Dun. This species was found damaging *Dalbergia latifolia*.

180. Anomala aurora.

Anomala aurora, Arrow, Ann. Mag. Nat. Hist. (8) x, 1912, p. 337.

Pale yellow, entirely suffused above and beneath with a delicate rosy-green metallic lustre, sometimes with a large vaguely reddish patch on each side of the pronotum, a small brown spot near each lateral margin and two or three still smaller on each side of the pygidium.

It is a stout, oval and highly convex species. The head is rugosely punctured, with the clypeus semicircular and flat. The pronotum is minutely and sparingly but rather deeply punctured, with its sides obtusely angulated in the middle, the front angles acute, the hind angles obtuse but well-marked, and the base margined and gently trisinuate. The scutellum is minutely punctured, and the elytra strongly in regular rows, with a wide, irregularly punctured second interstice. The pygidium and the lower surface are rather strongly but not closely punctured, the latter thinly clothed with pale hairs. The front tibiæ are strongly bidentate, the hind femora short and thick, the hind tibiæ a little inflated in the basal half, and the larger claw of the front and middle feet is cleft.

The sexes scarcely differ, but the inner anterior claw of the male is a little widened and the apex of the front tibia rather less blunt than in the female.

Length, 10·5–12 mm.; breadth, 5·5–6·5 mm.

BURMA: Maymyo (*H. L. Andrewes*, May), Ruby Mines (*W. Doherty*).

Type in the British Museum; co-types in Mr. H. E. Andrewes' collection.

Mr. H. M. Lefroy has received the species from Maymyo as feeding upon peach (*Prunus persica*).

181. Anomala fracta.

Omaloplia fracta, Walker,* Ann. Mag. Nat. Hist. (3) iii, 1859, p. 55.

Testaceous, with the head, pronotum and scutellum strongly, and the elytra less strongly, suffused with metallic lustre, the head or the posterior part of it, the pronotum (except the lateral margins), and the scutellum dark coppery green or red, the elytra decorated with rather indefinite dark markings, the dark parts consisting of the extreme outer margins, a patch round the scutellum, one at each shoulder, and a vague crescent common to the posterior part of the two elytra, its ends directed towards, or continuous with, the humeral patches. There is also a dark spot on each side of the pygidium. The hind tibiæ (and sometimes all) are also dark metallic, as well as the tarsi. The primary

intervals of the elytra are generally wholly or in part lighter than the general ground-colour.

It is a small, elongate-oval, not very convex species. The head is entirely rugose, except on the vertex, which is coarsely punctured. The clypeus is small and shortly transverse, with its front margin nearly straight. The pronotum is shining, but rather strongly punctured, with its hind edge completely margined and only very gently sinuated, its sides gently rounded, the front angles not very acute and the hind angles very obtuse. The scutellum bears a few punctures and the elytra are strongly and closely punctate-striate, the punctures large and confluent. The pygidium is strongly and rugosely punctured, and the lower surface is strongly punctured and almost without hairy clothing. The legs are moderately long, the hind tibiæ a little inflated before the middle, and the longer claw of the front and middle feet cleft.

♂. The antennal club is as long as the footstalk.

Length, 6·5–8 mm.; breadth, 3·5–4 mm.

CEYLON.

Type in the British Museum.

182. Anomala puella.

Anomala puella, Arrow, Ann. Mag. Nat. Hist. (8) x, 1912, p. 338.

Entirely pale yellow, with a faint metallic lustre, the antennæ and tarsi only being a little darker.

The body is shortly ovate in form, convex and shining, with pale erect hairs upon the pygidium and lower surface. The head is strongly and rugosely punctured, with the clypeus short and broadly rounded, its margins strongly reflexed and the frontal suture carinate. The pronotum is strongly and closely punctured, with the base completely margined, the sides strongly rounded, the front angles acute and the hind angles rounded away. The scutellum is well punctured, and the elytra are closely striate-punctate, with the intervals narrow, except the subsutural one, which is broad and strongly and irregularly punctured. The pygidium is strongly and closely punctured. The prosternum is slightly lobed behind the front coxæ, and the mesosternum is not produced. The front tibiæ are bluntly bidentate, and the larger claw on each of the four anterior feet is cleft.

♂. The lower lobe of the inner front claw is acutely pointed, broad and angulated at the lower edge.

Length, 10 mm.; breadth, 5·5–6·5 mm.

BURMA: Karen Hills (*W. Doherty*).

Type in the British Museum.

This little insect is one of the puzzling species which stand on the border line between *Anomala* and *Mimela*. It is very much like *Mimela debilis*, Sharp, to which it is undoubtedly allied. The prosternum is slightly prominent behind the front coxæ, but does not form an angular process between them, and both the species must, I think, be placed in *Anomala*, if any distinction is to be retained.

183. **Anomala ænigma**, sp. nov.

Pale yellow, with a faint golden-green suffusion. The clypeus and the tarsi are red, and the vertex, the humeral callus, a short longitudinal line near the outer margin of each elytron about the middle and a basal spot adjoining the scutellum on each side, black or brown, the last sometimes absent.

It is small, oval and convex. The head is rugosely punctured, the eyes large, and the clypeus small, with its margin strongly rounded and raised. The pronotum is strongly and closely punctured, with its sides well rounded, its angles obtuse (the hind ones almost rounded off) and the base marked with a deeply incised marginal stria. The scutellum is well punctured, and the elytra are deeply punctate-striate, with a very broad, strongly and irregularly punctured subsutural interval. The pygidium is closely, coarsely and confluently punctured, and bears long erect hairs on the sides of its posterior part, and the metasternum is moderately finely and closely punctured and clothed with very fine erect pale hair. The front tibia is armed with very blunt teeth, and the longer claw is cleft on the front and middle feet. The prosternum forms an erect, sharply pointed process behind the front coxæ.

♂. The inner front claw is broad, angulated at its lower edge, very acute at the tip and deeply cleft.

In the female specimen the dark spots adjoining the scutellum are absent, but this may not be a constant feature.

Length, 10–12 mm.; breadth, 6 mm.

Burma: Rangoon, Karen Hills (*W. Doherty*).

Type in the British Museum.

This species is closely related to *A. discoidea*, Burm. (of the Malay Peninsula), which Ohaus places in the genus *Mimela*, on account of the existence of a prosternal process; but the process is not easily visible, being in an incipient stage only, and, in the absence of any other reason for separating it from *Anomala*, it seems to me unnatural to do so.

A. ænigma was found in the same locality as *A. puella*, Arr., from which, in spite of its more marked prosternal process, it is not very easily distinguishable.

184. **Anomala leporalis**, sp. nov. (Plate III, figs. 28, 29.)

Testaceous, with the head, the pronotum (except broad lateral margins and a narrow median line), an elongate triangular patch upon the anterior part of the elytra (enclosing, but not including, the scutellum) and sometimes a small posterior spot on each side of the suture and a transverse bar at the base of the pygidium, dark brown or nearly black. The extremities of the tibiæ and the tarsi are also dark, and the head, pronotum and scutellum are suffused with a metallic green lustre.

Small and oval in shape, smooth and shining. The head is rugose, with the sides of the clypeus converging and the front

margin gently excised in the middle and not strongly reflexed. The pronotum is rather strongly punctured, more strongly at the sides, with the lateral margins regularly rounded, the front angles slightly acute, the hind angles almost obsolete and the base finely margined. The scutellum is finely punctured and the elytra bear seven dorsal rows of strongly impressed punctures, the second row disrupted in front and the fifth becoming incomplete behind. The pygidium is rather coarsely and confluently punctured. The prosternum forms a short pointed process behind the front coxæ. The sides of the metasternum are rather closely punctured and clothed with thin short yellow hair. The front tibia is armed with two strong sharp teeth, the hind tibia is very short and broad, and the longer claw is cleft on the front and middle feet.

♂. The inner front claw is broad and unequally cleft.

Length, 10 mm.; breadth, 5·5 mm.

BURMA: Paungde (*G. Q. Corbett*), Shenmaga (*L. Fea*).

Type in the British Museum.

185. **Anomala decipiens**, sp. nov. (Plate III, figs. 27, 34.)

Testaceous, with the head, the pronotum (except broad lateral margins and sometimes a narrow median line), the anterior part of the elytral suture, the extremities of the tibiæ and the tarsi red, or brown, the head, pronotum and scutellum suffused with a greenish metallic lustre.

It is small, oval, smooth and shining. The head is rugose, with the clypeal margin uniformly curved and strongly reflexed. The pronotum is rather strongly punctured, with the lateral margins regularly rounded, the front angles slightly acute, the hind angles rounded and the base finely margined. The scutellum is finely punctured, and the elytra bear seven dorsal rows of strongly impressed punctures, the second row disrupted in front. The pygidium is rugosely punctured. The prosternum forms a slight pointed process behind the front coxæ. The sides of the metasternum are rather closely punctured and thinly clothed with short yellow hairs. The front tibia is armed with two strong and sharp teeth, the hind tibia is very short and broad, and the longer claw is cleft on the front and middle feet.

♂. The inner front claw is dilated and unequally cleft.

Length, 8·5–10 mm.; breadth, 5–6 mm.

BURMA: Pegu, Palon (*L. Fea*, Aug. & Sept.), Tharrawaddy (*G. Q. Corbett*), Kawkareik, Amherst Dist. (*F. H. Gravely*, Nov.).

Type in the British Museum.

186. **Anomala siliguria**, sp. nov. (Plate III, fig. 31.)

Pale testaceous, with the elytra very pale, and the head, a vague more or less triangular patch on each side of the pronotum, the scutellum, elytral suture, the abdomen, tibiæ and tarsi reddish, the head and prothorax suffused with a very feeble metallic red lustre.

Small, oval and convex in shape. The head is rugosely punctured, with the clypeus broadly rounded and its margin strongly reflexed. The pronotum is strongly, deeply and rather evenly punctured, with its sides strongly and regularly rounded, the front angles almost right angles, the hind angles almost obsolete, and the base completely and finely margined. The scutellum is well punctured, and the elytra are strongly and closely grooved at regular intervals, the grooves containing large closely-set punctures; the second row of punctures is disrupted in its anterior half. The pygidium is deeply, coarsely and rather closely punctured. The sides of the metasternum are strongly punctured and clothed with short and rather scanty yellow hair. The prosternum is not distinctly elevated behind the front coxæ. The front tibia is armed with two strong teeth, the hind tibia is very short and broad, and the longer claw is cleft on the front and middle feet.

♂. The inner front claw is dilated and very unequally cleft.

♀. The inner front claw is slender and equally cleft.

Length, 9–10 mm.; breadth, 5–5·5 mm.

United Provinces: Dehra Dun (*C. F. C. Beeson*); Bengal: Siliguri, 3000 ft. (*H. M. Lefroy*); Sikkim: Mungphu (*E. T. Atkinson*).

Type in the British Museum.

Taken in numbers by Mr. H. M. Lefroy.

This is very closely related to *A. decipiens*, but the dark markings upon the pronotum are vague and often scarcely visible. The puncturation is generally stronger than in *A. decipiens*, especially upon the pygidium. The absence of a prosternal process is a very well-marked distinction, although it is only easily seen when the front legs are drawn forward.

187. **Anomala læta**, sp. nov.

Bright testaceous yellow, partly or entirely suffused with a greenish or golden metallic lustre, and with the head, the pronotum (except narrow lateral margins, generally sharply defined), a median and two lateral patches upon the pygidium, the hind tibiæ, all the tarsi, and usually the metasternum, coppery or dark metallic green. These dark areas may in certain specimens be almost or entirely wanting.

This is a small, oval, convex, very smooth and shining species. The clypeus and forehead are rugose, the margin of the former straight in front and strongly reflexed, and the vertex is finely and sparsely punctured. The pronotum is also finely and sparsely punctured, the punctures being a little larger, but not closer, towards the sides; the lateral margins are slightly rounded, the front angles slightly acute, the hind angles distinct but obtuse and the base completely margined. The scutellum bears a few fine punctures, and each elytron has six deeply punctured dorsal striæ, the second disrupted in front and abbreviated behind, and the fifth bearing an incomplete series of punctures along the

middle. The pygidium is deeply, but not very closely, transversely striolated. The metasternum is coarsely punctured at the sides and thinly clothed with short yellow hair. The legs are short and stout, the front tibia armed with two strong teeth, the hind tibia very short and broad, and the longer claw cleft on the front and middle feet.

Length, 9–10 mm.; breadth, 5–6 mm.

Bombay: N. Kanara (*T. R. D. Bell*).

Type in the British Museum; co-types in Mr. H. E. Andrewes' collection.

I have seen only females of this species, which, although superficially rather like *A. decipiens*, has very well marked characters in the very glossy pronotum, shape of the clypeus, distinct hind angles of the thorax, etc.

188. Anomala angusta.

Anomala angusta, Arrow, Ann. Mag. Nat. Hist. (8) ix, 1912, p. 79.

Testaceous, with a slight golden or coppery suffusion and with a rather vague dark patch on each side of the pronotum.

It is a long narrow insect, slightly increasing in width from in front backwards and not very convex. The head is rugosely punctured, and the clypeus is semicircular. The pronotum is strongly and closely punctured and lightly sulcate along the middle, strongly contracted in front and broadest at the base; the sides are angulated before the middle, and nearly straight from there to the angles, which are sharp, the front angles acute and the hind right angles, the base being completely margined. The scutellum is closely punctured and rather rounded at the apex, and the elytra are deeply and rather evenly striated, the striæ rather indistinctly punctured, the interstices convex and very sparsely punctured. The pygidium and the sides of the metasternum are rugose and clothed with grey hair, and the abdomen is coarsely punctured and more scantily hairy. The legs are long and slender, the front tibia bidentate, and the longer claw of the front and middle feet cleft at the apex, the latter very minutely.

♂. The inner front claw forms an extremely broad lamina.

♀. The inner front claw is rather broad.

This species is related to *A. straminea*, Semen., but it is much more elongate and slightly metallic.

Length, 10–12·5 mm.; breadth, 5–7 mm.

Sikkim: Mungphu (*E. T. Atkinson*), Kurseong (*Verschraeghen*), Darjiling, 7000 ft. (*Brunetti*, June).

Type in the British Museum.

189. Anomala aureoflava, sp. nov. (Plate III, figs. 32, 33.)

Pale testaceous yellow, entirely suffused with a golden green lustre, the tarsi and the middle segments of the abdomen reddish beneath.

Elongate-oval in shape, with the legs, especially the hind ones, long and slender, finely punctured and only moderately shining above. The head is very closely and deeply punctured, rather confluently on the clypeus, which is broad, with its front margin nearly straight in the middle. The pronotum is closely and evenly punctured, with its sides gently rounded, the front angles nearly right angles, the hind angles obtuse, and the base gently rounded and completely margined. The scutellum is well punctured, and the elytra are finely striated, the striæ containing fine and close, but rather indefinite, punctures, the second stria disrupted in front and abbreviated behind; the intervals are unequal and finely, irregularly and not closely punctured. The marginal membrane is rather broad behind. The pygidium is finely transversely strigose. The metasternum is strongly punctured and clothed at the sides with exceedingly fine pale pubescence. The front tibiæ are bidentate, the terminal tooth long and the lateral one very short, the hind tibia is long, not inflated nor constricted, the four posterior tarsi are slender, and the longer claw of the two anterior pairs of feet cleft.

♂. The inner front claw is short, strongly dilated and very deeply and unequally cleft.

Length, 10 mm.; breadth, 5 mm.

BURMA: Bhamo (*F. M. Mackwood*, April), N. Shan States, Nam Kham.

Type in the British Museum.

This very closely resembles *A. testacea*, Hope, but the head is more deeply and closely punctured, the clypeus is more rectangular, the intervals of the elytra are rather more sparingly punctured, and the marginal membrane a little more conspicuous behind.

190. Anomala testacea.

Anomala testacea, Hope,* Gray's Zool. Miscell. 1831, p. 24.

Pale yellow, with a faint golden-green lustre above and beneath, the tarsi and the third, fourth and fifth ventral segments alone being rather darker in colour.

It is elongate-oval in shape and not very convex, with the surface above and beneath almost without hair, but finely and closely punctured and not very shining. The head, pronotum and scutellum are minutely, closely and very uniformly punctured. The clypeus is broadly rounded, the eyes small and wide apart. The sides of the pronotum are gently and evenly rounded, the front angles acute, the hind angles obtuse, and the base finely and completely margined. The elytra have six lightly impressed and indefinitely punctured dorsal striæ, and the intervals are minutely and irregularly punctulated. The pygidium is finely transversely strigose, and the entire ventral surface is similarly but rather less closely strigose. The legs are rather slender, the

front tibia armed with two sharp teeth, the hind tibia long, and the longer claw of the front and middle feet cleft.

♂. The front tarsus is rather short and thick and its inner claw broad, deeply and unequally cleft. The club of the antenna is not elongated as in *A. variegata*.

Length, 8·5 mm.; breadth, 5 mm.

NEPAL (*Maj.-Gen. Hardwicke*).

Type in the British Museum.

Hope associated specimens of two different, but rather similar, species under this name, and, as they belong to different sexes, I have selected the male. Burmeister has treated *A. testacea* as a synonym of *A. palleola*, Gyll., but the species of this group seem to be very numerous, local, and difficult to distinguish. Burmeister appears not to have seen Hope's specimens, and the latter's "description" consists only of five words. Gyllenhal's species is from "India orientalis," a term of uncertain import.

191. Anomala variegata. (Plate IV, fig. 9.)

Anomala variegata, Hope,* Gray's Zool. Miscell. 1831, p. 24.

Pale testaceous yellow, with a very slight metallic suffusion above and beneath, and, in the male, with the posterior part of the head (bilobed anteriorly) and an irregular elongate mark on each side of the pronotum (produced towards the front and hind margins, but not reaching them), a spot at the base on each side (sometimes not detached), and an indication of a median line, dark green. The pygidium bears two dark spots placed longitudinally on each side.

Fig. 46.—*Anomala variegata*, ♂.

These markings may be vaguely indicated in red or brown in the female, but are usually absent.

It is elongate-oval in shape and moderately convex. The head is densely and uniformly rugosely punctured, with the clypeus rather broad, the front margin broadly rounded and not very strongly reflexed. The pronotum is closely but not very finely punctured, with the sides entirely rounded, the front angles acute, the hind angles indistinct, and the base finely margined and gently trisinuate. The scutellum is finely punctured, and the elytra are deeply and rather evenly punctate-striate, the fifth and seventh intervals being a little wider than the rest and bearing a few punctures in the anterior part. The pygidium is finely transversely striolated and bears a few long hairs at the apex. The metasternum is rather closely rugose at the sides and thinly clothed with pale erect hairs. The legs are rather slender, the front tibiæ bearing two teeth, the upper one very slight and the apical one very long and nearly straight, the hind tibia moderately

long and gradually dilating to the extremity. The longer claw of the front and middle feet is cleft.

In addition to the colour-difference already described, the male is rather less elongate in form than the female, and the lower lobe of the larger front claw is strongly dilated. The club of the antenna is long.

Length, 9 mm.; breadth, 4 mm.

NEPAL (*Maj.-Gen. Hardwicke*—types); SIKKIM: Darjiling District, Kalimpong (*F. H. Gravely*, April, May).

Type in the British Museum.

192. **Anomala comma**, sp. nov. (Plate IV, fig. 8.)

Testaceous, with a golden-green suffusion, and decorated with two confluent dark spots on the vertex and one having somewhat the shape of an inverted comma on each side of the pronotum. The pygidium and extremity of the abdomen beneath are reddish.

It is elongate-oval, with rather long and stout legs, moderately shining above and almost destitute of hairy clothing, except at the sides of the metasternum. The head and pronotum are finely, evenly and closely punctured, the clypeus nearly straight in front, the eyes prominent, but far apart. The sides of the pronotum are gently rounded, the front angles acute, the hind angles obtusely rounded and the base finely margined. The scutellum is well punctured, and the elytra are deeply punctate-striate, with the subsutural interval very coarsely and confluently, and the others finely, but not closely, punctured. The pygidium is transversely strigose. The front tibia is bidentate, the terminal tooth long and the upper one very short; the hind tibia is rather long and slender, and the longer claw of the front and middle feet is cleft.

♂. The front tarsus is rather thickened and its inner claw bent and dilated.

Length, 10 mm.; breadth, 5 mm.

SIKKIM: Gopaldhara, Rungbong Valley (*H. Stevens*).

Type in the British Museum.

This is rather more elongate than *A. variegata*, the golden-green suffusion is deeper, the marks upon the pronotum are reduced and the puncturation of the latter finer. I have seen only a single male specimen.

193. **Anomala ciliatipes**, sp. nov.

Reddish chestnut, with a coppery lustre above and beneath.

It is small, oval, convex, very smooth and shining. The clypeus is small, broadly rounded and, like the forehead, closely rugose, and the vertex is strongly punctured. The pronotum is moderately strongly punctured, with the sides obtusely angulated before the middle, the front angles slightly acute, the hind angles well-marked, but a little obtuse, and the base margined. The

scutellum bears a few fine punctures, and the elytra bear six deeply impressed, finely punctured dorsal striæ; the intervals are convex, the subsutural one broader than the rest and divided by a line of coarse punctures, which is incomplete behind and disrupted in front. The marginal membrane is rather wide posteriorly. The pygidium is transversely strigose and bears a very few long erect hairs. The metasternum is clothed at the sides with rather close yellowish pubescence. The legs are rather long and slender, the front tibia armed with two strong teeth, the hind tibia moderately slender and the longer claw of the front and middle feet cleft. The claw-joint of each foot is encircled by a few very long and fine bristles, longer than the claws.

♂. The inner front claw is very broadly dilated and sharply angulated beneath.

Length, 9·5 mm.; breadth, 5 mm.

ASSAM (*Lt.-Col. F. Badgley*).

Type in the British Museum.

194. **Anomala longiceps**, sp. nov. (Plate III, fig. 19.)

Testaceous, suffused with a metallic green lustre, and with the head (except the front part of the clypeus), a large irregular discoidal patch upon the pronotum (sometimes resolved into two by a median line), the pygidium, or a patch on each side of it, and parts of the lower surface, dark green or coppery. The legs are pale, with the tarsi red and the hind tibiæ coppery red.

It is elongate-oval and rather depressed, with very long and slender legs, not very shining above, the entire surface being closely punctured, and there is only a very scanty clothing of minute hairs beneath. The clypeus is narrow, semi-elliptical in shape and densely rugose, and the forehead is densely punctured. The pronotum and scutellum are rather closely punctured, with the sides of the former rounded, all the angles rather sharp and the base finely margined. The elytra bear each a sutural and three discoidal costæ, broad and well-elevated in the middle, but disappearing in front and behind, and the entire surface is finely but rather rugosely punctured. The pygidium is rather feebly, and the metasternum and abdomen are more finely, rugulose and shining. The second ventral segment bears two spines close to the lateral margin on each side. The front tibia is armed with two teeth, the terminal one rather long; the hind tibia is very long, the tarsi are very slender, and the longer claw is cleft on the front and middle feet.

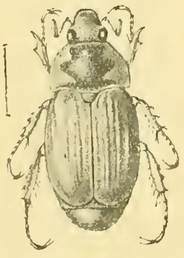

Fig. 47.—*Anomala longiceps*, ♀.

♂. The longer front claw is very unequally cleft, the hind tibia is more slender, and the hind tarsus longer, than in the female.

Length, 9 mm.; breadth, 4·5 mm.

Burma : Karen Hills, 2700–3500 ft. (*L. Fea*, Dec.).

Type in the Genoa Museum ; co-type in the British Museum.

This is a member of the group called by Ohaus *Spinanomala*, on account of the spines at the sides of the second ventral segment.

195. Anomala pallidospila.

Anomala (*Spinanomala*) *pallidospila*, Arrow, Ann. Mag. Nat. Hist. (8) x, 1912, p. 327.

Deep metallic green or coppery green, the elytra light brown, with margins of varying breadth, and sometimes nearly the whole surface, greenish black ; the sides of the pronotum, a narrow basal line on each side, the scutellum, a small spot near the outer edge of each elytron behind the middle, and the greater part of the femora, coxæ and sternum pale yellow. The pygidium is deep reddish and the tibiæ are coppery.

The shape is elongate-ovate, rather depressed and distinctly tapering before and behind, and almost the whole body, except the elytra, is clothed with rather coarse and not close, greyish hairs. The head is rugose, and the clypeus flat and semicircular. The pronotum is rather strongly punctured, the close and fine punctures being intermixed with larger ones which bear long erect hairs. The scutellum bears a few large punctures and the elytra are deeply striated, the intervals being unequal and finely punctured. The pygidium and metasternum are rather lightly rugose and hairy, and the abdomen more closely so. The second abdominal segment bears on each side three spines, rather larger than those forming the general clothing. The mesosternum is not produced, the front tibiæ are strongly bidentate, the four posterior legs very long and slender, and the larger claw of the front and middle feet cleft.

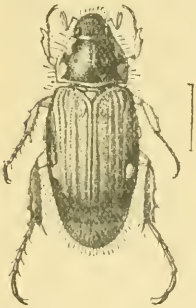

Fig. 48.—*Anomala pallidospila*, ♂.

♂. The hind legs are longer than those of the female, and the inner front claw is broad but very acute.

Length, 8–10 mm. ; breadth, 4·5–5 mm.

Burma : Maymyo, 3500 ft. (*H. L. Andrewes*, May).

Type in the British Museum ; co-types in Mr. H. E. Andrewes' collection.

This species is said to feed on the leaves of peach trees, *Prunus persica*.

It is closely related to the group of Bornean species to which Dr. Ohaus has given the name *Spinanomala*. The characteristic spines at the sides of the abdomen differ only slightly from the general hairy clothing and the mesosternal epimera are not produced upwards. It seems to me that no sufficient reason remains for regarding *Spinanomala* as more than a subgenus of *Anomala*.

196. Anomala cinderella, sp. nov.

Rather dark brown, with a metallic green lustre, the hind tibiæ and all the tarsi greenish black, the pronotum moderately closely, and the head and pygidium more scantily, clothed with erect yellowish setæ. The sides of the metasternum are rather thickly clothed with soft yellow hair.

It is elongate-oval, rather narrow in shape and rather shining. The clypeus and forehead are densely rugose, and the vertex strongly punctured, the clypeus rather small and transverse, and straight in front. The pronotum is rather closely and uniformly covered with intermixed large and small punctures; the sides are gently rounded, the front angles right angles, the hind angles well-marked but slightly obtuse, and the base margined. The scutellum is finely punctured, and the elytra bear five strongly impressed and finely punctured dorsal striæ, the subsutural interval being wide and irregularly punctured in its anterior half and divided in its posterior half. The pygidium is very finely transversely strigose and thinly clothed with long setæ. The legs are rather slender, the front tibia armed with two strong teeth, the hind tibia moderately slender, and the longer claw of the front and middle feet cleft.

♂. The inner front claw is very strongly dilated and bent.

Length, 13 mm.; breadth, 7 mm.

SIKKIM: Darjiling, Nagri Spur, 5000 ft.; Gopaldhara, Rungbong Valley, 6300 ft. (*H. Stevens*).

Type in the British Museum.

In this species the marginal line of the pronotum is rather imperfect in the middle, but the margin is reflexed all round.

197. Anomala chinensis.

Phyllopertha chinensis, Redt.,* Reise der Novara, Zool. ii, 1867, p. 70.

Phyllopertha atritarsis, Fairm., C. R. Soc. Ent. Belg. 1891, p. 11; Ohaus, Deutsche Ent. Zeits. 1905, p. 82.

Adoretosoma metallicum, Arrow, Trans. Ent. Soc. Lond. 1899, p. 266.

Euchrysinda chinensis, Reitt., Verh. Nat. Ver. Brünn, xli, 1903, p. 80.

Bright orange, suffused with a golden or rosy metallic lustre, the scutellum and elytra, and in the male, also the hinder part of the head and the pronotum (with the exception of the lateral margins) deep blue-green. The middle and hind tarsi and the extremities of the hind tibiæ are black in both sexes.

The body is very long and narrow, not convex, very smooth, shining and almost devoid of hair above and beneath, and the legs are very long. The clypeus and forehead are finely and densely rugose, the former very short, with the sides converging and the front margin gently rounded, and the vertex is moderately punctured and shining. The pronotum is very smooth, with extremely minute scattered punctures: it is very transverse, with the sides not rounded, but distinctly angulated before the middle, the front

angles very acutely produced, the hind angles nearly right angles, and the base finely and completely margined. The scutellum is short, obtuse and finely punctured. The elytra each bear six deeply impressed dorsal rows of punctures, the second abbreviated behind, the intervals narrow, the fifth a little wider and bearing a few scattered punctures; the apical margins are separately rounded and the angles obtuse. The pygidium is very smooth and shining, with minute scattered punctures, and the sides of the sternum and abdomen are rather coarsely punctured. The front tibia is bidentate, the hind tibia rather strongly inflated in the middle and constricted before the end; the claws are very long and slender, and the longer one on the front and middle feet minutely cleft.

♂. In addition to the difference in coloration already described, the body is narrower, the clypeus smaller, the legs longer and stouter, the front tibia broader, with much shorter and sharper teeth, and the longer claw almost imperceptibly toothed at a distance from the tip, and the longer middle claw is very minutely cleft at the apex.

Length, 10–14 mm.; breadth, 5–6·5 mm.

ASSAM: Khasi Hills (*Ohaus*); TONKIN (*Ohaus*); CHINA: Szechuen, Hongkong.

Type in the Vienna Museum; that of *A. metallicum* in the British Museum.

198. **Anomala fulviventris.** (Plate III, fig. 35.)

Adoretosoma fulviventre, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 235.

Bright yellow, with a metallic green suffusion, usually with the vertex of the head and two round spots, or more or less triangular patches, near the middle of the pronotum (in the ♀) or with the entire head, pronotum (except the lateral margins), scutellum and elytra (in the ♂) deep metallic green. The hind tarsi are usually also dark, and all the tarsi, the hind tibiæ and the metasternum may be so, at least in the male. In certain specimens the head and thorax remain pale, while the elytra are dark; in others the two first named are deep green, the elytra having a purplish hue. Occasionally tbe metallic lustre is quite absent.

The shape is very elongate, parallel-sided and rather depressed. The head is densely rugose in front and closely punctured on the vertex, and the clypeus is short and broad, with its margin strongly reflexed and nearly straight in front. The pronotum is finely, sparingly, but rather evenly, punctured, transverse, with the angles well-marked, the front ones acute and the hind ones obtuse, the base finely margined and gently trisinuate. The scutellum bears scattered punctures, and each elytron has five strongly punctured entire dorsal striæ, the subsutural one with or without an incomplete median line of punctures; the apical angles are rounded. The pygidium is strongly and moderately closely

punctured. The lower surface is almost without hair, the sides are strongly punctured, and the mesosternum is not produced. The legs are long, the front tibia is bidentate, the hind tibia inflated before the middle, and the claws are long and slender.

♂. The larger front claw is not cleft and the longer middle one only very feebly; the hind tibia is rather swollen in the middle and contracted at the extremities.

♀. The longer claw of the front and middle feet is slightly cleft.

Length, 6·5–8·5 mm.; breadth, 4–5 mm.

Sikkim: Gopaldhara, Rungbong Valley (*W. K. Webb*, May), Kurseong, 6000 ft. (*E. A. D'Abreu*, May), Pedong (*Desgodins*): Punjab: Kangra Valley (*G. C. Dudgeon*).

Type in the Paris Museum.

199. **Anomala signaticollis.** (Plate III, fig. 36.)

Anomala signaticollis, Nonfried, Berl. Ent. Zeitschr. 1893, p. 334.

Bright yellow, with a pale metallic green lustre, with the vertex of the head, the centre of the pronotum, the extremity of the hind tibiæ and the hind tarsi, deep green. The extreme inner and outer edges of the elytra may also be dark green, and this may spread inwards until a large part or the whole of the elytra is of this colour, the head and prothorax becoming simultaneously diffused with it, until on the former only a narrow front margin and on the latter narrow lateral margins remain pale.

The body is elongate, parallel-sided and rather depressed. The head is densely rugose in front and strongly punctured behind, and the clypeus is short and broad, with its margin strongly reflexed and nearly straight in front. The pronotum is sparingly but rather evenly punctured, strongly transverse, with the front angles acute, the hind angles obtuse, and the base finely margined and gently trisinuate. The scutellum is small and short, smooth in the middle, with a few punctures near the sides. The elytra have each five strongly impressed and coarsely punctured dorsal striæ, the subsutural interval being wide, with an incomplete median line of irregular punctures on its anterior part; the marginal membrane is distinct, and the apical angles are rounded. The pygidium is moderately and rather deeply punctured. The lower surface is almost free from hair, the sides strongly punctured and the mesosternum not produced. The legs are long, the front tibia is bidentate, and the hind tibia inflated, the claws are slender, and the longer one of the front and middle legs minutely cleft.

♂. The outer division of the longer front claw is extremely minute and remote from the tip of the claw. The hind tibia is rather swollen in the middle and contracted at the extremities.

Length, 7–8 mm.; breadth, 4 mm.

Assam: Khasi Hills, Cherrapunji; Shillong; Manipur (*W. Doherty*).

Type in Dr. Ohaus' collection.

This is extremely like *A. fulviventris*, Bl., but seems to be rather

more constant in colouring, the prothoracic patch does not divide into two, and the longer front claw of the male has an exceedingly minute outer branch at a distance from the tip. In *A. fulviventris* this has disappeared.

200. **Anomala galerucina**, sp. nov.

Deep metallic green, with the elytra sometimes dark blue, and with the following parts bright orange-yellow:—the front of the clypeus, the lateral margins (and sometimes the whole circumference) of the pronotum, the third interval of the elytron, the middle part of the second, the anterior part of the fifth and the posterior part of the seventh, the pygidium except at the sides, and the femora and tibiæ, except the hinder part of the hind tibia. The front and middle tarsi are reddish and the hind tarsi nearly black. The metasternum and abdomen are dark green in the male and partly or entirely yellow in the female.

Fig. 49.—*Anomala galerucina*, ♀.

It is very long and narrow, and the legs are slender. The head is finely and rugosely punctured, and the clypeus short, narrowing to the front, where it is nearly straight. The pronotum is strongly and moderately closely punctured, with the sides scarcely curved, distinctly angulated near the middle, with the front angles very sharp and the hind angles nearly right angles. The scutellum is short, wide and strongly punctured. The elytra are deeply striated, the striæ containing rather indistinct punctures, and the third, fifth and seventh intervals being more elevated and convex than the rest. The pygidium is rather strongly and closely punctured, the metasternum closely punctured and clothed with fine grey pubescence.

♂. The front tibia is armed with two sharp teeth placed close together, the hind tibia is inflated before the middle and constricted before the end, the longer middle claw is minutely cleft at the apex, and the front ones are entire. The pygidium is less closely punctured than in the female.

♀. The front tibia is armed with two strong oblique teeth, and the longer front and middle claws are cleft.

Length, 7–8·5 mm.; breadth, 3–3·5 mm.

SIKKIM: Gopaldhara, Rungbong Valley (*W. K. Webb*, May, June).

SECTION IV.

Key to the Species.

1 (44) Elytra showing strongly-marked striæ or lines of punctures.
2 (3) Body clothed everywhere with fine hair .... *lignea*, sp. n., p. 202.
3 (2) Body not clothed with hair above.

4 (7) Front angles of the prothorax not more acute than the hind angles.
5 (6) Elytra deeply striated .... *bruchomorpha*, Arr., p. 203.
6 (5) Elytra lightly striated .... *trivirgata*, Fairm., p. 204.
7 (4) Front angles of the prothorax more acute than the hind angles.
8 (35) Form elongate; hind tibiæ slender.
9 (28) Upper surface very finely and closely punctured.
10 (27) Clypeus broad.
11 (20) Elytra not banded.
12 (17) Elytra very deeply sulcate.
13 (14) Body not tapering in front and behind .... *semiaurea*, sp. n., p. 205.
14 (13) Body tapering in front and behind.
15 (16) Head and pronotum having dark marks .... *connectens*, sp. n., p. 205.
16 (15) Head and pronotum uniformly coloured .... *diversipennis*, sp. n., p. 206.
17 (12) Elytra not very deeply sulcate.
18 (19) Sides of the prothorax uniformly curved; front angles rectangular. *tinctipennis*, sp. n., p. 207.
19 (18) Sides of the prothorax straight in front; front angles acute ...... *agilis*, sp. n, p. 207.
20 (11) Elytra banded.
21 (26) Elytra not parallel-sided.
22 (23) Outer margins of the elytra not reflexed .... *mystica*, sp. n., p. 208.
23 (22) Outer margins of the elytra reflexed.
24 (25) Lower surface pale .... *bella*, sp. n., p. 208.
25 (24) Lower surface dark .... *flavofasciata*, Arr., p. 209.
26 (21) Elytra parallel-sided .... *flavirentris*, Arr., p. 210.
27 (10) Clypeus narrow and semicircular. *flavopicta*, Arr., p. 211.
28 (9) Upper surface shining, not very finely and closely punctured.
29 (32) Elytra not strongly sulcate.
30 (31) Upper surface dark, with transverse band .... *flavonotata*, Arr., p. 212.
31 (30) Upper surface pale, with dark markings .... *lineatopennis*, Bl., p. 212.
32 (29) Elytra strongly sulcate.
33 (34) Black, with pale markings ...... *flavovaria*, sp. n., p. 213.
34 (33) Entirely black .... *corvina*, sp. n., p. 214.
35 (8) Form short and convex; hind tibiæ stout.
36 (37) Pygidium entirely clothed with hair .... *semiænea*, Arr., p. 214.
37 (36) Pygidium not entirely clothed with hair.
38 (39) Front tibia tridentate .... *protea*, Arr., p. 215.
39 (38) Front tibia bidentate.
40 (41) Upper surface not shining ...... *decorata*, Kirsch, p. 216.
41 (40) Upper surface shining.
42 (43) Pygidium not very coarsely punctured .... *conjuga*, Arr., p. 216.

43 (42) Pygidium very coarsely punctured. *anopunctata*, Burm., p. 217.
44 (1) Elytra without strongly-marked grooves or lines of punctures.
45 (84) Elytra densely sculptured.
46 (47) Fifth joint of the antenna very long .... *auripennis*, Arr., p. 218.
47 (46) Fifth joint of the antenna not very long.
48 (57) Upper surface dark coppery.
49 (54) Pygidium very thinly hairy.
50 (51) Clypeus semicircular .... *shanica*, sp. n., p. 218.
51 (50) Clypeus subrectangular.
52 (53) Femora and lateral margins of pronotum pale .... *pictipes*, sp. n., p. 219.
53 (52) Femora and lateral margins of pronotum not pale .... *cantori*, Hope, p. 220.
54 (49) Pygidium closely hairy.
55 (56) Marginal membrane of the elytra broad .... *laniventris*, Arr., p. 221.
56 (55) Marginal membrane of the elytra not broad .... *densa*, sp. n., p. 221.
57 (48) Upper surface not dark coppery.
58 (69) Pronotum and elytra dissimilarly coloured.
59 (62) Pygidium not hairy.
60 (61) Elytra pale; sides of the pronotum angulated .... *angulicollis*, sp. n., p. 222.
61 (60) Elytra dark; sides of the pronotum rounded .... *igniceps*, sp. n., p. 222.
62 (59) Pygidium hairy.
63 (64) Elytra rugose .... *seminitens*, sp. n., p. 223.
64 (63) Elytra not rugose.
65 (66) Elytra without distinct lines of punctures .... *papuna*, sp. n., p. 224.
66 (65) Elytra with distinct lines of punctures.
67 (68) Elytra rather shining .... *xanthoptera*, Bl., p. 224.
68 (67) Elytra scarcely shining .... *dawnensis*, sp. n., p. 225.
69 (58) Pronotum and elytra similarly coloured.
70 (73) Upper surface pale.
71 (72) Anterior angles of the prothorax very obtuse .... *obtusicollis*, sp. n., p. 225.
72 (71) Anterior angles of the prothorax distinct .... *chrysochlora*, sp. n., p. 226.
73 (70) Upper surface not pale.
74 (75) Pygidium entirely opaque ...... *desiccata*, sp. n., p. 226.
75 (74) Pygidium not entirely opaque.
76 (77) Pronotum not shining, punctures very dense .... *malabariensis*, Bl., p. 227.
77 (76) Pronotum shining, punctures not very dense.
78 (83) Pygidium densely sculptured.
79 (82) Moderately shining above.
80 (81) Pygidium scarcely hairy; pronotum rather more transverse .. *chloronota*, Arr., p. 227.

81	(80)	Pygidium hairy; pronotum rather more elongate	*perplexa*, Hope, p. 228, and *indistincta*, sp. n., p. 229.
82	(79)	Very shining above	*chloropus*, sp. n., p. 229.
83	(78)	Pygidium shining, not densely sculptured	*peguensis*, sp. n., 230.
84	(45)	Elytra very smooth and shining, finely punctured.	
85	(104)	Upper surface green.	
86	(87)	Small	*chlorocarpa*, sp. n., p. 230.
87	(86)	Large.	
88	(91)	Legs and lower surface uniform deep green, not at all golden or fiery.	
89	(90)	Pronotum deeply and densely punctured	*monochroa*, Bates, p. 231.
90	(89)	Pronotum not deeply and densely punctured..........	*chlorosoma*, sp. n., p. 231.
91	(88)	Legs and lower surface not uniform deep green.	
92	(103)	Elytra without abruptly-ending lateral margins.	
93	(100)	Pygidium less finely rugulose.	
94	(95)	Elytra broadest behind the middle (♀ with very hairy pygidium)	*dimidiata*, Hope, p. 232.
95	(94)	Elytra not broadest behind the middle (♀ without very hairy pygidium).	
96	(99)	Very shining above.	
97	(98)	Marginal membrane of elytra very narrow	*dussumieri*, Bl., p. 233.
98	(97)	Marginal membrane of elytra less narrow................	*chlorophylla*, sp. n., p. 233.
99	(96)	Less shining above	*cupripes*, Hope, p. 234.
100	(93)	Pygidium very finely rugulose (opaque in ♀).	
101	(102)	Bright green above; legs golden.	*grandis*, Hope, p. 234.
102	(101)	Rosy green above; legs blue ..	*rhodomela*, sp. n., p. 235.
103	(92)	Elytra with abruptly-ending lateral margins	*chlorochelys*, Arr., p. 236.
104	(85)	Upper surface dark coppery ..	*rufiventris*, Redt., p. 236.

201. **Anomala lignea**, sp. nov.

Chestnut-red, with a slight coppery or metallic green lustre, the tibiæ and tarsi rather darker than the rest of the body, and the upper and lower surface entirely clothed with extremely fine greyish setæ.

It is elongate-oval, slightly convex and not very shining, and the legs are rather long and slender. The head is finely and closely granulated, with the clypeus rather small and the front margin only slightly reflexed. The pronotum bears very dense and uniform punctures, which tend to run together transversely, and the sides are slightly angulated before the middle, the front

angles acute and the hind angles nearly right angles, but blunt. The scutellum is similarly punctured, and the elytra have deeply impressed unpunctured striæ, with the intervals convex and everywhere finely and densely punctured. The pygidium is finely, densely and evenly granulated. The lower surface is finely punctured all over, but less closely along the middle. The front tibia is bidentate, the hind tibia slender, and the larger claw of the front and middle feet cleft.

♂. The two teeth of the front tibia are rather short and sharp, and the inner front claw is short and broad.

Length, 14·5 mm.; breadth, 7·5 mm.

BURMA: Momeit (*W. Doherty*).

I have seen only the unique male type in the British Museum.

It is very similar to *A. pilosella*, Fairm. (= *A. hirsutula*, Nonfr.) from Tonkin and Western China, but is rather smaller and more elongate. The metallic lustre is feebler and the head is rather more finely and closely sculptured.

202. Anomala bruchomorpha.

Anomala bruchomorpha, Arrow, Ann. Mag. Nat. Hist. (8) x, 1912, p. 328.

Orange, suffused (except upon the elytra) with a greenish metallic lustre, the head (except the front part of the clypeus) and scutellum black, as also the following markings: a broad median stripe upon the pronotum (sometimes absent), and four irregularly shaped spots upon each elytron, forming two transverse median bands. A bifid mark upon each side of the base of the pygidium, the middle of the sternum, transverse bands on the dorsal side of the abdomen, the hind tibiæ and all the tarsi are also usually dark, and the posterior part of the elytra from the second transverse row of spots is deeper in colour than the anterior part.

The body is shortly ovate and rather depressed above. The head is densely punctured, with the clypeus broad and nearly straight in front. The pronotum is minutely, densely and evenly punctured, with the lateral margins strongly angulated in the middle, nearly straight to the front angles, and gently incurved to the hind ones, all the angles being nearly right angles; the base is well lobed and without a marginal stria. The scutellum is closely punctured, and the elytra are deeply and rather closely and regularly sulcate, the 2nd sulcus broken into irregular punctures at the base, and the intervals minutely and sparingly punctured, the 5th having a linear row of punctures either throughout its length or restricted to its basal part. The pygidium is finely transversely strigose. There is only a very short pubescence at the sides of the metasternum, and the mesosternum is not produced. The front tibia is strongly bidentate and the longer claw of the front and middle feet is cleft. The club of the antenna is rather long.

♂. The club of the antenna is very long, and the teeth of the front tibia are short and sharp.

♀. There is a slight dilatation of the outer margins of the elytra at the middle, and the terminal tooth of the front tibia is long and blunt.

Length, 10–12·5 mm.; breadth 6–7 mm.

Burma: Taung-ngu (*G. Q. Corbett*), Karen Hills, 2700–3300 ft. (*L. Fea*).

Type in the British Museum; co-types in the Genoa Museum.

Both in shape and coloration this is a very well-marked and peculiar insect. I have examined several females, but only a single male, in which specimen alone the prothorax has a broad median dark band. It is not yet possible to decide whether this represents a sexual feature or merely a colour variety.

203. Anomala trivirgata.

Anomala trivirgata, Fairm.,* Ann. Soc. Ent. Belg. xxxii, 1888, p. 20.

Pale yellow, with a very faint golden or greenish lustre, and decorated with black markings consisting of two spots between the eyes, three longitudinal bars on the pronotum, almost but not quite reaching the front and hind margins, a common spot upon the elytral suture a little before the middle (sometimes broken into two), and a very small longitudinal spot opposite the last and near the lateral margin on each side. There is also a spot in each anterior angle of the pygidium.

The shape is oval, moderately elongate and convex. The clypeus is rugose and rather broad, and the forehead is densely punctured. The pronotum is finely and closely punctured, but rather less finely at the sides; the lateral margins are gently bisinuated, with the front angles blunt and the hind angles almost acute, the base being rather prominent in the middle and not margined. The scutellum is well punctured, and the elytra have a sutural line and two paired dorsal lines of fine punctures, with the intervening spaces broad and irregularly punctured; there are also microscopic punctures sparingly scattered over the whole surface. The pygidium is rather strongly transversely striolated. There is no sternal process. The sternum is clothed with moderately long yellow hair. The front tibia is bidentate, the hind tibia rather long and slender and the larger claw of the front and middle feet is cleft. The fifth joint of the antenna is longer than the third and fourth.

♂. The club of the antenna is long, and the terminal tooth of the front tibia short and sharp. The pygidium is protuberant at the end and the abdomen is longitudinally channelled beneath.

Length, 15–17 mm.; breadth, 8·5–9·5 mm.

Bhutan (*L. Durel*); Burma: N. Chin Hills; S.W. China: Chengtu, Ta-chao.

Type in the Paris Museum.

204. **Anomala semiaurea**, sp. nov.

Deep golden-green, with the clypeus, the sides of the pronotum (sometimes also the front and hind margins narrowly), the elytra and the legs pale greenish- or pinkish-golden.

It is elongate-oval, rather broad behind and moderately convex. The head is very strongly and densely punctured, rugosely upon the clypeus, which is broadly rounded. The pronotum is finely and closely punctured, with a longitudinal median furrow, the sides are strongly rounded, the front angles acute, the hind angles obtuse and the base not margined. The scutellum is similarly punctured. The elytra are deeply sulcate, the intervals strongly convex and the sulci finely and closely punctulated. The pygidium is coarsely transversely striolated. The sides of the body beneath are rather thinly clothed with grey hair, the front tibia is bidentate, the hind tibia rather slender, and the longer claw is cleft on the front and middle feet.

♂. The teeth of the front tibia are acute, the pygidium is very convex and furnished with a few hairs on its posterior part.

♀. The teeth of the front tibia are very blunt, and the whole pygidium is thinly clothed with long hairs.

Length, 14 mm.; breadth, 8·5 mm.

Burma: Haka, Chin Hills (*F. E. Venning*).

Type in the British Museum.

This species is very close to the Chinese *A. imperialis*, Arrow, but the head is rather larger, the pygidium less closely sculptured and more shining, and the coloration different.

205. **Anomala connectens**, sp. nov.

Yellow, with a golden-green lustre, the elytra brick-red and non-metallic, and the pygidium and end of the abdomen, the hind tibiæ, all the tarsi, a spot on each side of the vertex and an irregular elongate patch on each side of the pronotum dark brown.

It is elongate-oval in shape, tapering in front and behind, closely punctured and not very shining, with rather slender legs. The head is rugosely punctured, with the clypeus rather rectangular, but gently rounded in front. The vertex, pronotum and scutellum are finely and closely punctured, the sides of the pronotum rounded, the front angles right angles, the hind angles obtuse, and the base not margined. The elytra are deeply and closely sulcate, with the intervals convex and minutely punctured, and the apical margins not separately rounded. The pygidium is finely transversely strigose. The front tibia bears a long terminal tooth and a short upper one, the hind tibia is moderately long, and the longer claw is cleft on the front and middle feet.

♂. The inner front claw is broadly dilated.

Length, 11 mm.; breadth, 5·5 mm.

Burma: Papun, Tenasserim (*Lt.-Col. Adamson*).

Type in the British Museum.

This species forms a connecting link between *A. variegata* and *A. diversipennis.* It is rather smaller and narrower than the latter and differs also in the truncate hind margins of the elytra and the dark markings of the head and pronotum. These markings are almost as in *A. variegata*, Hope, but that species has a marginal line at the base of the pronotum.

206. **Anomala diversipennis**, sp. nov. (Plate III, figs. 25 & 26.)

Testaceous, with a golden-green lustre upon the head, pronotum, scutellum, lower surface and legs, and the elytra, the pygidium, the whole of the last two abdominal segments, except a pale lateral spot on each side of the penultimate one, the posterior half of the fourth, a lateral spot on each side of the four anterior segments, a small spot on the outer face of each of the posterior femora, and the tarsi, brick-red or black.

It is elongate-oval in shape, not very convex and scarcely shining, the upper surface being finely and closely punctured. The head, pronotum and scutellum are closely and evenly punctured, the clypeus more densely. The eyes are small and rather far apart, the clypeus short and broad, with the margin strongly reflexed, nearly straight in front and rounded at the sides. The sides of the pronotum are gently curved, straight in front, with the front angles acute, the hind angles obtuse and the base not completely margined. The elytra have each six very deeply impressed dorsal striæ, the second disrupted at the base, and the intervals are convex and finely punctured, the fifth dilated and divided at the base; the apical margins are separately rounded and rather broadly fringed. The pygidium is transversely rugose. The sides of the metasternum are rugosely punctured and very scantily clothed with short pale hairs. The front tibia is armed with a long terminal tooth and a slight upper one, the hind tibia is long, and the longer claw of the front and middle feet is cleft.

Fig. 50.—*Anomala diversipennis*, ♂.

♂. The terminal tooth of the front tibia is straight and acute and the inner front claw short and broad. Probably the elytra are generally black.

♀. The terminal tooth of the front tibia is curved and very blunt, and the inner front claw long and slender. The pygidium is more strongly rugose than in the male and has two pale converging bars. Probably the elytra are generally red.

Length, 22·5–24 mm.; breadth, 6·5–7·5 mm.

BURMA: Karen Hills, 2700–3300 ft. (*L. Fea*).

Type in the Genoa Museum; co-type in the British Museum.

I have seen two males with black elytra, one (small) male with red elytra and one female with red elytra.

207. **Anomala tinctipennis**, sp. nov.

Testaceous, with the head, pronotum and scutellum suffused with a golden green lustre, and the elytra, the pygidium, the posterior part of the abdomen and the tarsi red.

It is elongate-oval in shape, not very convex or shining, the whole upper surface being finely and rather closely punctured. The head, pronotum and scutellum are closely and evenly punctured, the eyes small and rather far apart, the clypeus small and broad, with the margins strongly reflexed, the sides strongly rounded, the front margin nearly straight. The sides of the pronotum are evenly curved, the front angles nearly right angles, the hind angles well-marked but obtuse, and the base gently trisinuate and not margined. The elytra have five moderately impressed dorsal striæ containing fine but confused punctures, the sub-sutural interval is broad and incompletely divided, and all the intervals are finely and irregularly punctured; the marginal membrane is narrow. The pygidium is transversely and not very strongly rugose. The sides of the metasternum are rugosely punctured and scantily clothed with short yellowish hair. The front tibia is armed with a long terminal tooth and a short upper one; the hind tibia is long and slender, and the longer claw of the front and middle feet is cleft.

♂. The last joint of the front tarsus is enlarged, the inner front claw is strongly dilated, and the terminal tooth of the front tibia is very sharp.

♀ unknown.

Length, 13·5 mm.; breadth, 7 mm.

Assam (*Col. W. F. Badgley*).

Type in the British Museum.

208. **Anomala agilis**, sp. nov.

Testaceous, with a golden green lustre, the pygidium, abdomen (except the two basal segments) and tarsi brown or reddish.

The body is elongate-oval in shape, not very convex, and scarcely shining, the upper surface being finely and closely punctured. The head, pronotum and scutellum are densely punctured, the eyes small and far apart, the clypeus broad, with the margin strongly reflexed, straight in front and rounded at the sides. The sides of the pronotum are very obtusely angulated in the middle, straight in front, the front angles acute, the hind angles distinct but not sharp, and the base gently trisinuate, but not completely margined. The elytra have six rather deep dorsal striæ, the second disrupted in front and abbreviated behind, and the fifth interval dilated and divided in its anterior part; the striæ contain fine and rather confused punctures, and the intervals are finely and irregularly punctured; the marginal membrane is rather broad. The pygidium is transversely and rugosely strigose. The sides of the metasternum are rugosely punctured and

thinly clothed with short yellowish hair. The front tibia is armed with a long terminal tooth and a short upper one, the hind tibia is long and slender, and the longer claw of the front and middle feet is cleft.

♂. The last joint of the front tarsus is enlarged and the inner front claw strongly dilated.

♀ unknown.

Length, 11·5–12·5 mm.; breadth, 6·5 mm.

SIKKIM: Mungphu (*E. T. Atkinson*), Darjiling, Pashok, 3500 ft. (*F. H. Gravely*, May, June), Soom, 4000–5000 ft. (*F. H. Gravely*); BHUTAN (*L. Durel*).

Type in the British Museum; co-types in the Indian Museum and M. René Oberthür's collection.

Taken by Mr. Gravely on a *Datura* plant.

209. **Anomala mystica**, sp. nov.

Testaceous, with a faint metallic green lustre, the elytra traversed by two interrupted sinuous black lines, one before and the other behind the middle. The hind tibiæ and tarsi are deep metallic green.

It is elongate-oval, tapering in front and behind, the upper surface everywhere finely and densely punctured or punctate-rugose, with very minute inconspicuous setæ, the lower surface clothed at the sides with fine tawny hair. The clypeus is small, transversely rounded and finely and rugosely punctured, the forehead and vertex very closely and evenly punctured. The pronotum and scutellum are also very closely and evenly punctured, the sides of the former gently rounded in the middle, straight in front and behind, the front angles rather acute, the hind angles blunt, but nearly rectangular, and the base not margined. The elytra are striated, the intervals unequal, convex and finely and closely punctate-rugulose, and the membranous margins rather conspicuous. The pygidium is rather finely transversely rugulose. The front tibia is bidentate, the hind tibia slender, its longer terminal spine very slender and about twice as long as the shorter one, and the longer claw of the front and middle feet cleft.

♂. The inner front claw is short, broad and acute, and the teeth of the front tibia are very short and sharp.

Length, 14 mm.; breadth, 8 mm.

BURMA: Karen Hills (*W. Doherty*).

Type in the British Museum.

It is a peculiar species, chiefly remarkable for the very minute setæ with which its upper surface is beset.

210. **Anomala bella**, sp. nov. (Plate I, fig. 9.)

Testaceous, entirely suffused with a golden, golden green or metallic purplish lustre, with the hinder part of the head, a narrow median line and an irregular patch on each side of the

pronotum (generally more or less fused together), bright metallic green, and the suture, outer edge and posterior part of the elytra black. The pygidium (sometimes with the exception of a V-shaped apical pale mark), parts of the lower surface, the hind tibiæ and the tarsi are also dark.

The body is boat-shaped and the upper surface is everywhere closely sculptured and not shining. The clypeus is broadly rounded and deeply rugose, the forehead is rugosely and the vertex strongly punctured. The pronotum is closely, deeply and rather evenly punctured, with the sides obtusely angulated near the middle, the front angles right angles, the hind angles obtuse and the base not margined. The scutellum is strongly punctured, and the elytra are deeply sulcate, with the intervals strongly convex and irregularly punctured; the sides are narrowly flanged and widest a little behind the middle. The pygidium is strongly transversely rugulose, and the body beneath is rugulose at the sides and finely punctured in the middle. The front tibia is bidentate, the hind tibia rather long and slender, and the larger claw cleft on the front and middle feet.

♂. The teeth of the front tibia are sharp, and the lower lobe of the inner front claw broad and very acute.

Length, 14–16 mm.; breadth, 7–8 mm.

SIKKIM: Mungphu (*E. T. Atkinson*); ASSAM: Chandkhira, Sylhet (*J. A. Sherwill*), Khasi Hills, Wali Jain, 1000–3000 ft. (May); BURMA (*F. M. Mackwood*, May).

Type in the British Museum; co-types in the Indian Museum, Calcutta, and the Agricultural Research Institute, Pusa.

The metallic lustre of the upper surface is green upon the head and thorax, and purple on the elytra, but the coloration is very variable. The basal pale patch upon the elytra generally reaches the middle, where it ends squarely, but it may be reduced, and in one specimen in the British Museum the dark colouring is almost absent.

211. Anomala flavofasciata.

Anomala flavofasciata, Arrow, Ann. Mag. Nat. Hist. (8) ix, 1912, p. 72.

Black or dark brown, with a greenish or bronzy lustre, which is scarcely traceable upon the posterior part of the elytra, and with a transverse zigzag yellow mark, interrupted or continuous, at the middle of the elytra.

It is ovate in shape, moderately broad in the middle and tapering in front and behind. The head is densely punctured, rugosely upon the clypeus, which is broad. The pronotum is closely set with fine but deep transverse punctures and has an iridescent lustre; its sides are subangulate before the middle, the front angles acute, the hind angles rectangular but slightly rounded off, the base not margined and moderately prominent in the middle. The scutellum is punctured like the pronotum. The elytra bear

a flattened dilatation from the shoulder to beyond the middle; they are deeply striated, with confused punctures in the striæ and upon the 2nd and 4th intervals, which are broad, and fine scattered punctures upon the remaining surface. The pygidium is transversely strigose and bears a few erect tawny hairs. The metasternum is finely punctured and pubescent, and the abdomen irregularly striolated, with transverse rows of stout bristles. The mesosternum is not produced, the front tibiæ are bidentate, the hind tibiæ long, and the larger claw of the front and middle feet is cleft.

♂. The front tibial teeth are short, the claw-joint is strongly curved and bears a sharp basal tooth, and the lower lobe of the inner claw is broad.

Length, 14–16·5 mm.; breadth, 7·5–8·5 mm.

SIKKIM: Kurseong, 4700–5000 ft. (*N. Annandale*), Gantok; BHUTAN (*L. Durel*); TONKIN: Mauson Mts., 2000–3000 ft. (*H. Fruhstorfer*).

Type in the British Museum.

A. flavofasciata is closely related to the Chinese *A. spiloptera*, Burm., as well as to *A. flavonotata* and *A. flaviventris*, which follow. The peculiar iridescent lustre of the pronotum and the well-marked lateral flange of the elytra will serve to distinguish it.

This insect is nocturnal in its habits, Mr. Annandale having noted that it hides by day in the moss under tree-trunks and emerges at night.

212. **Anomala flaviventris.** (Plate III, figs. 16 & 17.)

Anomala flaviventris, Arrow, Ann. Mag. Nat. Hist. (8) ix, 1912, p. 74.

Black or purplish black, with yellow markings as follows:—narrow lateral borders to the pronotum, an irregular transverse median band common to both elytra (directed slightly forward towards the extremities, which do not quite reach the outer margins), the posterior part or almost the whole of the pygidium, the lower surface of the body, the antennæ, femora, and front and middle tibiæ.

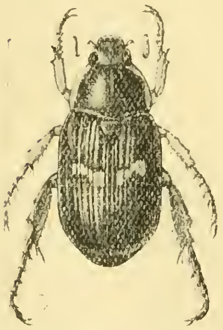

Fig. 51.—*Anomala flaviventris*, male.

The body is elongate, rather parallel-sided, closely punctured and scarcely shining above. The head is densely rugosely punctured, with the clypeus short and nearly straight in front. The pronotum is finely and densely punctured, with the sides obtusely angulate in the middle, the hind angles nearly right angles, the base not margined and very gently trisinuate. The scutellum is closely punctured at the sides. The elytra are deeply striated, with coarse confused punctures in the striæ and

upon the alternate intervals, the others being narrow, convex and minutely punctured. The pygidium and lower surface are very thinly hairy, and the metasternum is finely and closely punctured. The front tibia bears two strong teeth placed rather close together, the hind tibia is long and slender, and the front and middle feet have the larger claw bifid.

♂. The antennal club is rather long and the tibial teeth short and very sharp.

Length, 14·5 mm.; breadth, 7·5 mm.

SIKKIM: Kurseong (*Verschraeghen*, *Lynch*), Gopaldhara, Rungbong Valley (*H. Stevens*); N. BENGAL: Siliguri (Indian Mus., July).

Type in the British Museum.

Three specimens taken by Verschraeghen at Kurseong are males and have the pygidium transversely striolated and broadly black at the base, while four specimens from the Indian Museum, taken at Kurseong and Siliguri, are all females, with the pygidium densely pitted and yellow, except for a very narrow black basal line.

213. Anomala flavopicta.

Anomala flavopicta, Arrow, Ann. Mag. Nat. Hist. (8) ix, 1912, p. 75.

Pale yellow, with the head, a median stripe upon the pronotum extending from front to hind margin (narrowed before the latter but extending along it almost from side to side), the scutellum, and two irregular transverse bands upon the elytra (the anterior one frequently reaching the base and sometimes uniting with the posterior band), black or dark brown; the head, thoracic markings and scutellum faintly metallic. The base of the pygidium (with a pointed median prolongation), the tibiæ and tarsi are also dark, the front and middle tibiæ sometimes yellow on their inner side. The antennæ are long and yellow.

It is narrow, rather parallel-sided and not convex. The clypeus is small, narrowly semicircular and rugose. The eyes are large, the forehead very coarsely rugose, and the vertex strongly but not densely punctured. The pronotum and scutellum are closely punctured; the sides of the former are angulated before the middle, strongly convergent to the front angles, which are acute, and slightly divergent to the hind angles, which are nearly right angles. The elytra have three or four pairs of punctured striæ, bordering slight costæ, which, like the remaining surface, are minutely and rather sparingly punctulated; the intervals are irregularly punctured. The pygidium is transversely striolated and bears long hairs at the apex. The metasternum is densely punctured and clothed with rather long yellow hair, except in the middle, and the abdomen is strongly but not closely punctured. There is no sternal process. The front tibiæ are strongly bidentate, the hind tibiæ very long and slender and the longer claw of the front and middle feet is cleft.

♂. The inner front claw is broad and its lower edge strongly bisinuated.

Length, 13–14·5 mm.; breadth, 7–7·5 mm.

Sikkim: Kurseong (*E. A. D'Abreu*, *Verschraeghen*), Darjiling (*H. Fruhstorfer*).

Type in the British Museum.

This species is related to the Chinese *A. rufopartita*, Fairm., but is longer and narrower, and the markings are paler and less sharply defined.

214. Anomala flavonotata.

Anomala flavonotata, Arrow, Ann. Mag. Nat. Hist. (8) ix, 1912, p. 73.

Very dark greenish or coppery black above and beneath, with a narrow transverse zigzag yellow band at the middle of the elytra, sometimes breaking up into three small spots.

The body is elongate-oval, shining and moderately convex. The clypeus is short, rounded and rugosely punctured, the forehead closely and strongly punctured in front and thinly behind. The pronotum is rather finely and closely punctured, with the sides narrowed to the front, the front angles acute, the hind angles nearly right angles, the base trisinuate and not margined. The scutellum is well punctured, and the elytra rather unevenly punctate-striate, with a broad irregularly punctured subsutural space; the punctures disappear towards the apices, but the whole surface of the elytra is sprinkled with very fine scattered punctulations. The pygidium is very finely, but not closely, transversely strigose, with a few long hairs towards the apex. The metasternum is rugose and clothed with short erect pubescence, and the abdomen is striolated at the sides. The front tibia is strongly bidentate, the hind tibia slender and the longer claw of the front and middle feet is bifid.

♂. The upper surface is more minutely punctured and shining than in the female; the club of the antenna is longer; the terminal tooth of the front tibia much shorter and sharper; and the front claw-joint bears a sharp basal tooth.

♀. The terminal tooth of the front tibia is very broad and blunt.

Length, 15–18 mm.; breadth, 8–9 mm.

Sikkim: Kurseong, 5000 ft. (*Verschraeghen*, *E. A. D'Abreu*), Darjiling; Bhutan: Sakion (*L. Durel*).

Type in the British Museum.

215. Anomala lineatopennis.

Anomala lineatopennis, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 191.

Very dark coppery or greenish black above and beneath, with the lateral margins of the pronotum and the elytra straw-coloured, except the extreme sutural and external edges of the latter, and a narrow longitudinal stripe upon the humeral callus, gradually vanishing posteriorly, sometimes very short and sometimes extending nearly the whole length of the elytra.

The body is moderately elongate and convex, with the meta-

sternum entirely and rather densely, and the abdomen and extremity of the pygidium very sparsely, clothed with pale yellow hairs. The head is densely punctate-rugose, with the clypeus broad and almost straight in the middle. The pronotum is strongly and rather evenly punctured, with a more or less well-indicated median longitudinal groove; the sides are angulated near the middle, with the front angles rather acute, the hind angles rather obtuse, and the base gently rounded and not margined. The scutellum is distinctly punctured. The elytra are strongly, closely, and almost confluently punctured, the punctures at the sides forming impressed rows; two or three elevated costæ outlined by double rows of punctures are sometimes conspicuous on the dorsal part, but may be partly or wholly effaced. The pygidium is subrugosely punctured, the punctures being generally large and deep, but sometimes finer and shallower. The metasternum is very densely punctured, the abdomen strongly at the sides and sparsely in the middle. There is no mesosternal process. The front tibia is very strongly bidentate, the hind tibia is slender and the longer front and middle claws are cleft.

♂. The front tibia is very sharply bidentate, and the inner front claw is sharp, rather dilated and deeply cleft.

Length, 17–18 mm.; breadth, 9·5–10·5 mm.

UNITED PROVINCES: Dehra Dun, Mussoorie, Ramgarh (*C. F. C. Beeson*, June), Jolikote (May), W. Almora, Ranikhet (*H. G. Champion*); PUNJAB: Kulu, Simla, Naini Tal (May and June); BHUTAN (*L. Durel*); NEPAL: Khatmandu; BENGAL: Buxar Duars (*D. Naoroji*, May).

Type in the Paris Museum.

This species has been taken feeding upon the leaves of plum.

216. **Anomala flavovaria**, sp. nov.

Black and shining, with yellow markings, consisting of a broad irregular lateral border on each side of the pronotum, enclosing a black spot before the middle and emitting an internal branch on each side, beyond the middle, obliquely towards, but not reaching, the base, and a zigzag transverse band common to both elytra about the middle. The pygidium and abdomen are also yellow, but with black stripes at the sutures.

Oval and moderately convex, with the sternum clothed with short, erect and rather thick yellow hair. The clypeus is rugosely punctured, rounded in front and not large, and the forehead and vertex are rather finely and fairly closely punctured, The pronotum is finely, uniformly and moderately closely punctured, with the sides feebly rounded in the middle, straight in front and behind, with the front angles slightly acute, the hind angles slightly obtuse, and the base not margined. The scutellum is finely punctured, and the elytra are rather deeply sulcate, the sulci containing rather shallow punctures, the intervals convex, the second one very coarsely and irregularly punctured, and the fourth and sixth bearing single rows of rather scanty punctures.

The pygidium is finely and rather feebly transversely strigose. The legs are fairly long, the front tibia armed with two well-developed teeth, the hind tibia slender, and the longer front and middle claws cleft.

♂. The inner front claw is angularly dilated internally.

♀ unknown.

Length, 15 mm.; breadth, 8·5 mm.

ASSAM (*Col. W. F. Badgley*).

Type in the British Museum.

217. **Anomala corvina**, sp. nov.

Entirely shining black above and beneath, with the footstalk of the antenna alone pale yellow.

The shape is elongate-oval and rather depressed. The clypeus is broad and, like the forehead, finely punctured and shining, with the front margin strongly reflexed and nearly straight. The pronotum is finely, evenly and rather closely punctured, with the sides regularly rounded, the front angles nearly right angles, the hind angles blunt, and the base not completely margined. The scutellum bears a few punctures. The elytra are very closely and deeply sulcate, with the sulci not distinctly punctured, the intervals narrow and convex and only very scantily punctulated; the lateral margins are a little reflexed at the shoulders. The pygidium is rather coarsely transversely strigose. The sides of the metasternum are clothed with rather scanty yellowish hair. The front tibia is bidentate, the hind legs are very long and slender, the tibia not inflated nor constricted, and the longer claw is cleft upon the front and middle feet.

♂. The front tibia is very broad, the terminal tooth rather sharp, the upper tooth very minute, the front tarsus very short and thick, and the inner front claw short and strongly dilated.

♀ unknown.

Length, 13 mm.; breadth, 6·5 mm.

SIKKIM.

The single type specimen in the British Museum was taken by the late Sir Joseph Hooker about 1853.

218. **Anomala semiænea.**

Anomala semiænea, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911 p. 484.

Deep metallic green or coppery green, with the elytra, abdomen and legs chestnut-red, often with a very faint metallic tinge.

This is a small, not very convex, species, with the prothorax short and not broad and the elytra dilating from the shoulders almost to the extremities. The pygidium and the whole lower surface are clothed with rather long erect grey hair. The clypeus is broad, rugosely punctured and nearly straight in front, the forehead coarsely punctured, the pronotum moderately finely in the middle and a little more coarsely at the sides: the outer

margins are angulated at the middle, the front angles nearly right angles, the hind angles obtuse, the base very gently curved and not margined. The scutellum is minutely punctured. The elytra are deeply but unevenly striated, with moderately fine punctures in the striæ and upon the alternate intervals, which are broader than the rest. The pygidium is very finely and densely punctured, the sides of the metasternum strongly and closely, and the abdomen coarsely and sparingly. There is no mesosternal process. The front tibiæ are strongly bidentate, the hind tibiæ dilated at the end and constricted before it, and the larger claw of the front and middle tarsi is cleft.

♂. The front inner claw is broad, abruptly angulated near the middle of the lower edge, acute and strongly bifid.

Length, 9–11 mm.; breadth, 5–6·5 mm.

MADRAS: Nilgiri Hills, 4000–6000 ft. (April and May).

Type in the British Museum; co-types in Mr. H. E. Andrewes' collection.

A series of males, but no females, were taken by Mr. H. L. Andrewes.

219. Anomala protea.

Anomala protea, Arrow, Ann. Mag. Nat. Hist. (8) ix, 1912, p. 80.

Reddish testaceous, with a slight metallic lustre upon the head, thorax and legs, the elytra non-metallic and decorated with black markings, consisting of a large spot adjoining the scutellum on each side, broad lateral and apical margins, and an irregular transverse band beyond the middle, joining the lateral borders, the suture being reddish or black: or the colour may be entirely pale, with reddish markings, as described, upon the elytra: or the elytra may be entirely black, with very narrow anterior and external margins reddish testaceous like the remainder of the body: or the forehead, prothorax (except narrow lateral margins), scutellum and legs may be metallic greenish black, the elytra with black bands as described.

It is a small, globose, shortly ovate insect. The head is coarsely and closely punctured, with the clypeus broad and nearly straight in front. The pronotum is strongly punctured at the sides, a little more finely in the middle, with the lateral margins strongly rounded, the front angles sharp, the hind angles obtuse, and the base very gently trisinuate and not margined. The scutellum is strongly punctured, and the elytra are deeply punctate-striate, the punctures large and annular, the intervals narrow, and the 5th, 7th and 9th divided by longitudinal rows of punctures. The pygidium and the sides of the body beneath are coarsely and confluently punctured, the latter scantily hairy. There is no sternal process. The legs are stout, the front tibia strongly tridentate, the hind tibia very short, and the larger claw of the front and middle feet is deeply cleft.

♂. The inner front claw is very broad.

Length, 8–9 mm.; breadth, 5–5·5 mm.

SIKKIM : Kurseong (*Verschraeghen*), Mungphu (*E. T. Atkinson*), Darjiling, Gopaldhara, Rungbong Valley (*H. Stevens*), Kalimpong (*F. H. Gravely*, April, May); BHUTAN : Pedong (*L. Durel*); ASSAM : Sibsagar (*S. E. Peal*).

This species is similar in shape and pattern to *A. decorata*, Kirsch, but it is a little smaller, the pronotum is much less densely punctured, and the colour is not the same. The markings are strikingly inconstant. I have seen nine specimens, most, if not all, males, but two specimens decorated with red instead of black may be females, being so fragmentary as to render the sex indeterminable.

220. **Anomala decorata.**

Anomala decorata, Kirsch, Mitth. Mus. Dresden, i, 1878, p. 30.

Mahogany- or light chestnut-brown, with a light metallic red suffusion, and with irregular yellow markings upon the elytra partly outlined with dark brown. These pale markings consist of an irregular crescent crossing the suture near the middle of the elytra and reaching the anterior margin on each side of the scutellum, a short transverse bar also crossing the suture a little before the hind margin, and a few minute spots on each side. The metasternum is clothed rather closely, and the abdomen thinly, with short yellow hairs.

The shape is oval, compact and convex. The head is closely and rugosely punctured, the eyes small and widely separated, and the clypeus broad, with its margin gently rounded and not strongly reflexed. The pronotum is strongly and closely punctured, the punctures becoming coarse and confluent at the sides, which are gently rounded, the front angles sharp, the hind angles very blunt, and the base broadly trisinuate. The scutellum is broad, blunt and well punctured. The elytra bear rather closely set rows of moderately large punctures. The pygidium is finely and densely granulated. The legs are rather short, the front tibia armed with two sharp teeth, the hind tibia very stout and the longer claw cleft on the front and middle feet.

♂. The lower lobe of the longer front claw is broad.

Length, 11·5 mm.; breadth, 7 mm.

BURMA : Maymyo (*H. L. Andrewes*, May); MALAY PENINSULA : Perak (*W. Doherty*).

Taken on peach trees (*Prunus persica*) at Maymyo.

221. **Anomala conjuga.**

Pseudosinghala conjuga. Arrow, Ann. Mag. Nat. Hist. (7) vii, 1901, p. 400.

Yellow, with the head, the pronotum (except the lateral margins), the elytral suture, an anterior patch common to the two elytra and enclosing the scutellum, a common posterior patch extending to the hind margins, and the tibiæ and tarsi, reddish or deep metallic green.

It is small, shortly oval in shape, almost globose, very smooth and shining. The head is rugosely punctured, with the clypeus rounded. The pronotum is finely and sparingly punctured, with the lateral margins strongly rounded, the front angles acute, the hind angles obtuse, and the base rounded in a single curve and not margined. The scutellum is short and broad and bears a few fine punctures. The elytra each bear five very deep dorsal striæ, containing very large punctures, and the subsutural interval also bears a few very large punctures. The elytra are short and separately rounded at their extremities. The pygidium is rather finely and not closely punctured. The front tibia is armed with two strong teeth, the hind tibia is very short and stout, and the longer claw of the front and middle feet is cleft.

The darker pigmented parts of the body are deep green in colour in the male and red in the female, but there may perhaps be exceptions to this rule.

Length, 6 mm.; breadth, 3·5 mm.

Madras: Nilgiri Hills (*H. L. Andrewes*), S. Kanara, Nagody, 2500 ft. (*T. V. Ramakrishna*, Sept.); Bombay: N. Kanara, Castle Rock (*S. Kemp*, Oct.).

222. Anomala anopunctata.

Anomala anopunctata, Burm., Handb. Ent. iv, 2, 1855, p. 500.
Mimela nigrosellata, Ohaus, Tijds. v. Ent. lvi, 1913, p. 31 (new syn.).

Bright testaceous, smooth and shining, with the head, pronotum and scutellum suffused with a metallic green or coppery lustre; the head, a broad wavy dark line on each side of the middle line of the pronotum, a broad triangular patch at the base of the elytra, enclosing the scutellum (this and the prothoracic marks often outlined with darker pigment), a short longitudinal mark behind each shoulder, a spot on each side of the base of the pygidium, the extremities of the tibiæ and the tarsi red, brown or almost black.

It is shortly ovate and very convex. The clypeus is rugosely punctured, with the margin gently curved and strongly reflexed; the forehead is strongly and irregularly punctured. The pronotum and scutellum are closely punctured, the former having the sides regularly rounded, the front angles acute, the hind angles almost obsolete, the base very gently sinuated and not margined. Each elytron bears seven dorsal rows of deep and closely-set punctures, the second row breaking up at the base into a cluster of irregular punctures; the membranous margin is rather broad posteriorly. The pygidium is rather coarsely, closely and confluently punctured. The sternum and abdomen are rather strongly punctured and very scantily pubescent, and the prosternum forms a slight process behind the front coxæ. The front tibia bears two very strong teeth, the hind tibia is very short and broad, and the longer claw of the front and middle feet is cleft.

♂. The inner front claw is dilated and unequally cleft.

Length, 10–11 mm.: breadth, 6 mm.

Burma: Pegu (Indian Museum), Tenasserim.

This species has an extraordinary superficial resemblance to *A. decipiens*, Arr., from which it differs in important structural details.

223. **Anomala auripennis.**

Anomala auripennis, Arrow, Ann. Mag. Nat. Hist. (8) ix, 1912, p. 336.

Pale yellow, entirely suffused with a rosy or greenish-golden tinge, the head, pronotum (except the pale lateral margins), hind tibiæ and all the tarsi deep coppery-green.

It is ovate, short or moderately long, convex and only slightly shining. The head and pronotum are very closely punctured all over, the clypeus rugose and broadly rounded. The prothorax is not margined at the base, the sides are scarcely rounded, but slightly angulated before the middle, with the front angles almost right angles and the hind ones well marked but obtuse. The scutellum is well punctured, except at the sides. The elytra are minutely punctured all over, with larger punctures between; the latter form a sutural and two paired dorsal rows, the subsutural interval being very broad and coarsely punctured. The pygidium is finely transversely strigose. The sternum is moderately thickly clothed with soft yellowish pubescence. There is no mesosternal process. The front tibia is bidentate, and the larger claw of the front and middle tarsi cleft. The antennæ are rather long, and the 5th joint is equal in length to the two preceding joints together.

♂. The club is as long as the remainder of the antenna, the front tibial teeth are very short, and the hind tibia is slender.

♀. The body is more elongate, the antennal club moderately long, the terminal tooth of the front tibia is long and clavate, and the hind tibia is short and stout.

Length, 13–18 mm.; breadth, 8–9·5 mm.

Burma: Ruby Mines (*W. Doherty*), Karen Gheeu, 3900–4200 ft. (*L. Fea*, Feb., March), Plapu (*L. Fea*, April), Muleyit, 3000–3900 ft. (April), Pokokku (*Miss Molesworth*).

Type in the British Museum; co-types in the Genoa Museum.

This rather resembles the Japanese *A. lucens*, Ball., and some varieties of the European *A. ænea*, Deg., but it is sharply distinguished from those, as from nearly all other species of the genus, by the length of the 5th joint of the antenna.

224. **Anomala shanica**, sp. nov. (Plate IV, fig. 10.)

Deep coppery green, with the femora and antennæ reddish, and strongly metallic above and beneath.

Oval in shape, convex and not very shining above, and clothed beneath with short but rather thick greyish hair. The upper

surface is finely and densely punctured. The head is very deeply and rugosely punctured and quite opaque, except upon the vertex, and the clypeus is short and almost regularly semicircular. The pronotum is very closely and evenly punctured, with the sides strongly rounded, the front angles acute, the hind angles obtuse and the base not margined. The scutellum bears numerous fine punctures on each side. The elytra are everywhere finely and closely punctured, with rather larger punctures intermixed; there are only slight traces of longitudinal lines, but the membranous margins are moderately wide and conspicuous. The pygidium is finely and closely transversely strigose and bears a few long hairs towards the extremity. The abdomen beneath and the middle of the metasternum are finely punctured, and the sides of the latter are densely rugulose. The legs are fairly stout, the front tibiæ strongly bidentate, the hind tibiæ a little contracted before the extremity, and the longer claw cleft on the front and middle feet.

♂. The pygidium is rather less closely and finely rugulose than in the female, the terminal tooth of the front tibia is short, and the inner front claw broadly dilated.

♀. The terminal tooth of the front tibia is long and clubbed.

Length, 16–19 mm.; breadth, 9–10 mm.

Burma: S. Shan States, Kolaw, 4000 ft. (*F. M. Mackwood*, April), Karen Hills (*W. Doherty*).

Type in the British Museum.

Although all from different sources, I believe a female in the British Museum and one in Mr. Andrewes' collection (taken by Capt. A. K. Weld-Downing) to be conspecific with the male from the S. Shan States.

This species has the closest relationship to *A. russiventris*, Fairm. (Tonkin), but is less brilliant green above and less red beneath, and the legs are rather stouter. It also closely resembles *A. lasiocaula*, Ohaus, but is more densely punctured and has a rather broader pronotum. It is smaller and narrower than *A. pictipes*, and the clypeus is evenly rounded, instead of having a flattened front margin.

225. **Anomala pictipes**, sp. nov. (Plate III, fig. 4.)

Chocolate-brown, with a greenish coppery lustre, and with narrow lateral margins to the pronotum (sometimes only traceable in front), an irregular line on each side of the pygidium, the outer parts of the femora, and parts of the lower surface yellow.

Oval, convex and moderately shining, but the upper surface covered with very fine and dense punctures, a little less dense on the elytra, upon which there are shallow, indefinite striæ. The clypeus is rather small, subrectangular, with the punctures confluent. The sides of the pronotum are strongly rounded, the front angles very sharp, the hind angles very blunt, and the base broadly rounded and not margined in the middle; the

marginal membrane of the elytra is narrow. The pygidium is finely transversely strigose and bears a few scattered hairs. The body is more shining beneath, with a thin clothing of short hairs at the sides of the metasternum. The legs are stout, the front tibia armed with two sharp oblique teeth, the hind tibia broad, and the longer claw of the front and middle feet cleft.

♂. The pygidium is more densely sculptured and less shining, with the pale markings less apparent than in the female. The hind tibia is not dilated at the extremity.

♀. The pygidium is rather shining, the front tibia blunt at the extremity and the hind tibia a little dilated.

Length, 19–22 mm.; breadth, 10–12 mm.

Upper Assam: Sonapur (*L. G. Middleton*, June), N. Lakhimpur, Deju (*H. Stevens*, June); Burma: Bhamo (*T. Selkirk* and *L. Fea*, June, July), Palon, Pegu (*L. Fea*, Aug., Sept.).

Type in the British Museum; co-types in the Genoa Museum.

226. **Anomala cantori.** (Plate III, figs. 2 & 3.)

Euchlora cantori, Hope,* Mag. Nat. Hist. iv, 1840, p. 284.
Anomala severa, Burm.,* Handb. Entom. iv, 2, 1855, p. 504.

Uniform dark coppery above and beneath, sometimes a little more greenish below.

Broadly oval, convex, smooth above and slightly shining, but very finely and closely punctured; more shining beneath, and clothed at the sides with an extremely short pubescence. The clypeus is finely rugose and nearly semicircular, with the margin scarcely reflexed, and the forehead is densely punctured. The pronotum, scutellum and elytra are similarly densely punctured, the first having the punctures still closer and confluent at the sides, which are nearly straight in front, strongly rounded behind the middle, with the hind angles almost rounded off, the base being very gently trisinuate and not margined. The elytra are without longitudinal lines of punctures, except a juxtasutural one, and the marginal membranes are very narrow. The pygidium is transversely striolated, the metasternum and abdomen lightly punctured in the middle and rugose at the sides. The mesosternum is not produced, the front tibia is bidentate, the hind tibia short and stout, and the larger claw of the front and middle feet is cleft.

♂. The pygidium is entirely closely striolated, and the terminal tooth of the front tibia is a little sharper than in the female.

♀. The pygidium is closely striolated in the middle, more coarsely at the sides, and in some specimens pale lateral markings are visible.

Length 17–25 mm.; breadth, 10–14 mm.

Bengal: Barway (*P. Cardon*); Assam: Sylhet, Khasi Hills; Burma: Palon, Pegu (*L. Fea*, Aug., Sept.), Bhamo (*F. M. Mackwood*, April), Papun (*Col. Adamson*).

Type in the Oxford Museum; that of *A. severa*, Burm., in the Halle Museum.

227. **Anomala laniventris.** (Plate II, fig. 3.)

Anomala laniventris, Arrow, Ann. Mag. Nat. Hist. (8) x, 1912, p. 339.

Dark coppery-olivaceous, with the lateral edges of the pronotum, the lower surface of the body, and the femora yellow, the abdomen browner, and the tibiæ and tarsi deep metallic green.

Elongate-oval, not very shining, with the sternum, the pygidium and sides of the abdomen rather thickly clothed with short grey pubescence. The entire upper surface is closely and finely punctured, except the clypeus, which is rugose and broadly rounded. The base of the pronotum is rather prominent in the middle and not margined, and the sides are obtusely prominent in the middle, with the front angles nearly right angles and the hind angles obtusely rounded. There are a few indistinct longitudinal rows of fine punctures on the elytra, the outer margins of which are bordered with very broad membranous fringes. There is no mesosternal process. The front tibia is sharply bidentate, the hind tibia stout, and the larger claw of the front and middle feet is cleft. The 3rd and 5th joints of the antenna are longer than the 4th.

♂. The terminal tooth of the front tibia is slender and the upper one short but sharp. The inner lobe of the inner front claw is very broad and abruptly angulated at the middle of the lower edge.

♀. The teeth of the front tibia are rather long and sharp.

Length, 17–19 mm.; breadth, 9·5–10·5 mm.

Burma: Paungde (*G. Q. Corbett*), Palon, Pegu (*L. Fea*, Aug., Sept.), Rangoon (*E. T. Atkinson*).

Type in the British Museum; co-type in the Genoa Museum.

This species is related to the Himalayan *A. perplexa*, Hope, but is much duller in colour and easily recognizable by the very broad external membranes of the elytra.

228. **Anomala densa**, sp. nov. (Plate III, fig. 1.)

Coppery and moderately shining, with the clypeus and legs fiery red.

It is oval and rather convex, with the whole upper surface very finely and densely punctured, and the pygidium and the sides of the body beneath rather thickly clothed with fine grey hair. The clypeus is broadly rounded and densely granular. The pronotum is much narrowed in front, with the sides strongly rounded, all the angles blunt, the base not completely margined, the punctures very fine, deep and uniform, but with a very narrow unpunctured median line. The outer edge of the scutellum is also unpunctured. The elytra are rather less strongly and uniformly punctured and have indications of indefinite longitudinal lines of rather larger punctures, the membranous margins being narrow. The pygidium is densely granular. The front tibia is strongly bidentate, the hind tibia rather stout, and the longer claw is cleft on the front and middle feet.

♂. The apical tooth of the front tibia is sharp, the inner front

claw is angularly dilated, and the hind tibia is not dilated at the end.

♀. The apical tooth of the front tibia is blunt, and the hind tibia is dilated at the end.

Length, 16-18 mm.: breadth, 9-10 mm.

BURMA: Theinzeik (*P. Loizeau*); SIAM: hills between Me Ping and Thaungyin (*C. S. Barton*, Nov.).

Type in the British Museum; co-types in M. René Oberthür's collection.

Specimens of this species have been kindly presented to the British Museum by M. René Oberthür.

229. **Anomala angulicollis**, sp. nov. (Plate III, fig. 11.)

Reddish testaceous, with the forehead and vertex, the pronotum (except the lateral margins) and the scutellum dark bluish green, slightly metallic. The elytra also are sometimes suffused with a faint metallic golden lustre. The hind tibiæ and the tarsi are reddish.

It is oval, convex, densely punctured above and not shining, and the metasternum is rather thickly clothed with short erect pale pubescence. The head is strongly and closely punctured, the eyes are large and prominent, the clypeus is small, rather rugosely punctured, with the margin rounded and strongly reflexed. The pronotum is densely punctured, and at the sides confluently; the lateral margin is obtusely angulated before the middle and straight from there to the front and hind angles, which are distinct but rather obtuse, and the base is not completely margined. The scutellum is strongly punctured, and the elytra densely and rugosely, with rather indefinite impressed longitudinal lines. The pygidium is finely and densely rugose. The front tibia is armed with two sharp teeth; the hind tibia is short and stout, broad at the extremity and not constricted before it; and the longer claw is cleft on the front and middle feet.

♂. The upper tooth of the front tibia is shorter than in the female, and the longer front claw is angularly dilated at its lower edge.

Length, 15–16 mm.; breadth, 8–9 mm.

BENGAL: Chandipore, nr. Balasore, Orissa Coast (*F. H. Gravely*, June).

Type in the Indian Museum, Calcutta; co-types in the British Museum.

230. **Anomala igniceps**, sp. nov. (Plate III, fig. 12.)

Russet brown, with the clypeus and forehead fiery or golden-red; the vertex, pronotum and scutellum metallic olivaceous green; the elytra, pygidium and lower surface slightly tinged with green; the femora paler and the tibiæ and tarsi coppery.

It is oval in shape, with the head, pronotum and scutellum slightly shining, and the elytra and pygidium opaque. The clypeus is small, rounded and rugosely punctured, with its

margin strongly reflexed. The forehead is rather coarsely punctured and the pronotum strongly and densely, the punctures of the latter becoming confluent at the sides; the lateral margins are rounded, the front angles are right angles, the hind angles well marked but obtuse. The scutellum is closely punctured, except at the edges, and the elytra are densely and confluently punctured, with a few indistinct larger punctures which form scarcely distinguishable longitudinal lines, the marginal membrane being rather broad. The pygidium is densely granulated and opaque. The metasternum is moderately well clothed with pale hair and the sides of the abdomen less thickly. The front tibia is bidentate, and the longer claw is cleft on the front and middle feet.

♂. The apical tooth of the front tibia is short and sharp and the hind tibia moderately long.

♀. The apical tooth of the front tibia is long and curved and the hind tibia very short and stout.

Length, 14–17 mm.; breadth, 7·5–9 mm.

BURMA: Tenasserim.

Type in the British Museum.

It is not impossible that this is the *Melolontha semivirens* of Gyllenhal, the locality of which is unknown.

231. **Anomala seminitens**, sp. nov.

Shining coppery or golden green, with the elytra chocolate-brown, scarcely perceptibly suffused with metallic green, closely and coarsely punctured and opaque.

It is oval in shape and moderately convex. The clypeus is semicircular, strongly and closely punctured, with the margin strongly reflexed. The forehead is rather less closely punctured. The pronotum is very shining, finely punctured in the middle, the puncturation becoming stronger towards the sides, where it is coarse and rather close; the sides are angulated before the middle, all the angles are obtuse and the base is not completely margined. The scutellum bears a few conspicuous punctures, and the elytra are unequally but deeply and closely punctured, the punctures becoming confluent, especially at the sides; some of the larger punctures form indistinct longitudinal impressed rows. The pygidium is rather coarsely transversely rugose and clothed with rather long, but not thick, yellowish hair. The sides of the metasternum and abdomen are coarsely punctured and similarly clothed. The front tibia is armed with two strong teeth, the hind tibia short and stout and the longer claw of the front and middle feet is cleft.

♂. The lower lobe of the longer front claw is angularly dilated beneath.

Length, 14 mm.; breadth, 8 mm.

MADRAS: Ganjam, Berhampur (*E. T. Atkinson*).

Type in the British Museum.

I know only a single male specimen.

232. Anomala papuna, sp. nov. (Plate III, fig. 8.)

Deep metallic green, with the lower surface, femora and narrow lateral margins to the pronotum testaceous, the elytra russet, with a slight non-metallic green tinge, especially along the suture and at the margins, and the abdomen and pygidium reddish, with a slight metallic lustre. The tibiæ and tarsi are very dark metallic green.

It is oval, convex, closely punctured above and not very shining. The clypeus is broadly rounded, densely and confluently punctured, the forehead closely and deeply, and the vertex rather closely. The pronotum is closely, finely and rather unevenly punctured, with a very narrow smooth median line; the sides are regularly rounded, the front angles right angles, the hind angles very blunt and the base not entirely margined. The scutellum is finely punctured, the elytra very closely, but scarcely confluently, and almost without perceptible longitudinal lines of punctures. The pygidium is finely and densely rugose and opaque, with a rather thin clothing of fine decumbent yellow hairs. The metasternum is similarly clothed. The front tibia is armed with two strong teeth, the hind tibia is stout, and the longer claw is cleft upon the front and middle feet.

♂. The teeth of the front tibia are sharp, and the inner front claw is strongly dilated.

♀ unknown.

Length, 18 mm.; breadth, 10·5 mm.

BURMA: Tenasserim, Papun (*Lt.-Col. Adamson*).

Type in the British Museum.

233. Anomala xanthoptera. (Plate II, fig. 1.)

Anomala xanthoptera, Blanch.,* Cat. Coll. Ent. Mus. Paris. 1851 (1850), p. 195.

Anomala prasinicollis, Bates,* The Entomologist, xxiv, 1891, Suppl., p. 18.

Yellow, with a green tinge, metallic beneath, and with the head, pronotum (except the lateral margins), scutellum, hind tibiæ and tarsi bright metallic green, with red-brown reflections, and the front and middle tibiæ and tarsi and the abdomen reddish, with metallic green reflections. The elytra are of a peculiar pale greenish-russet tint.

It is shortly oval, convex and moderately shining. The clypeus is finely rugose and nearly semicircular, and the forehead is finely and closely punctured, a little more strongly and densely at the sides. The lateral margins of the pronotum are very bluntly angulated a little before the middle, the front angles nearly right angles and the hind angles very obtuse. The scutellum is finely punctured. The elytra are very finely punctured all over and have also larger punctures forming not very conspicuous double rows, and irregularly scattered in the subsutural interval; the membranous margin is narrow. The pygidium is very finely and

densely granulated and clothed with short and not very close, outstanding golden hair. The sides of the abdomen are similarly clothed, and those of the metasternum bear longer and thicker hair. The front tibia is armed with two strong teeth, and the longer claw is cleft upon the front and middle feet.

♂. The terminal tooth of the front tibia is straight and slender, and the inner lobe of the longer front claw is obtusely angulated beneath.

Length, 14·5–16 mm.; breadth, 9–10 mm.

Punjab: Kulu, Kangra Valley, 4500 ft. (*G. C. Dudgeon*, April); United Provinces: Dehra Dun (March).

Type in the Paris Museum; that of *A. prasinicollis* in M. René Oberthür's collection.

234. **Anomala dawnensis**, sp. nov. (Plate III, figs. 6 & 7.)

Russet brown, with a slight metallic green suffusion, the head, pronotum and scutellum olivaceous green, slightly metallic, and the lateral margins of the pronotum and the femora golden yellow.

Oval, convex, finely and closely punctured, and scarcely shining, with the pygidium and lower surface rather closely clothed with short grey hair. The clypeus and forehead are densely punctate-rugose, the former rounded and not very broad, and the vertex is closely and evenly punctured. The pronotum is very closely punctured, almost confluently at the sides, the front angles are right angles, the hind angles blunt, and the base is not margined. The scutellum is moderately punctured, and the elytra are everywhere finely and closely punctured, with distinct longitudinal rows of rather larger punctures, the membranous external margin being very distinct. The pygidium is very finely granular and opaque and clothed with pale silky hair. The front tibia is armed with two strong teeth, the hind tibia is short and stout, and the longer claw is cleft on the front and middle feet.

♀ unknown.

Length, 16 mm.; breadth, 8 mm.

Burma: Dawna Hills (*Col. C. T. Bingham*).

Type in the British Museum.

235. **Anomala obtusicollis**, sp. nov. (Plate III, fig. 10.)

Pale testaceous yellow, with the vertex and tarsi red, and the entire upper surface suffused with a faint greenish metallic lustre.

It is oval and convex in form, only slightly shining above, with the metasternum thickly clothed with short erect pale pubescence. The head is moderately strongly and closely punctured, the eyes are large and prominent, and the clypeus is small, with the margin strongly rounded and reflexed. The pronotum is finely and closely punctured, densely at the sides, with the lateral

margins gently rounded in front and straight behind, the front angles extremely blunt, the hind angles well marked, but not sharp, and the base not completely margined. The scutellum and elytra are closely but irregularly punctured, a little more coarsely than the pronotum, the elytra having rather larger punctures irregularly scattered towards the inner margins and others forming rather indefinite longitudinal lines. The pygidium is finely and densely rugose. The legs are not long; the front tibia is armed with two teeth, the upper one very short and obtuse; the hind tibia is very short and stout, with its extremity very broad and not constricted; and the longer claw is cleft on the front and middle feet.

♂. The club of the antenna is long, the apical tooth of the front tibia is sharp, and the inner front claw is angularly dilated beneath.

The female is not known.

Length, 15–16 mm.; breadth, 7·5–8·5 mm.

BENGAL: Orissa Coast, Puri (*F. H. Gravely* and *S. Kemp*, March, Aug., Nov.).

Type in the Indian Museum, Calcutta; co-types in the British Museum.

236. **Anomala chrysochlora**, sp. nov. (Plate III, fig. 13.)

Pale golden-green, with the head, the middle of the pronotum (rather vaguely), the hind tibiæ and the tarsi darker.

Oval in shape, stout, convex and not very shining, with the metasternum densely, and the pygidium and sides of the abdomen thinly, clothed with pale yellow hair. The clypeus is rather small, finely rugose and broadly rounded, and the forehead is strongly and densely punctured. The pronotum is very finely and closely punctured, with the sides strongly rounded, the front angles right angles, the hind angles obtusely rounded, and the base strongly sinuated and incompletely margined. The scutellum and elytra are entirely finely punctured, the latter with rather indefinite lines of larger punctures and a broad irregularly punctured subsutural interval. The pygidium is finely and shallowly rugulose. The front tibia is armed with two strong teeth, the hind tibia is short and stout, and the longer claw of the front and middle feet is cleft.

♂. The inner front claw is strongly bent and sharply angulated beneath, and the teeth of the front tibia are sharply pointed.

♀. The terminal tooth of the front tibia is blunt.

Length, 17–19 mm.; breadth, 9·5–10 mm.

BURMA: Tavoy (*W. Doherty*), Meetan (*L. Fea*, April).

Type in the Indian Museum, Calcutta; co-types in the British Museum and the Genoa Museum.

237. **Anomala desiccata**, sp. nov. (Plate II, fig. 11.)

Olivaceous green, tinged to a variable extent with brown, specially towards the posterior part of the elytra, and with

the lower surface and femora orange-red, with a metallic green suffusion, the tibiæ and tarsi deep metallic green.

It is shortly oval, very convex, closely punctured above and not very shining. The clypeus is densely punctured, the forehead a little less densely, the former being rather broad, straight in front and rounded at the sides. The pronotum is finely and closely punctured, more coarsely and densely at the sides; the lateral margins are strongly curved, the front angles slightly acute, and the hind angles well marked but obtuse. The scutellum is finely but not closely punctured, and the elytra are rather closely punctured, with somewhat larger punctures forming inconspicuous longitudinal lines. The pygidium is densely granular and opaque and clothed thinly with yellow hairs, which are closest a little beyond the base and near the apex. The sides of the metasternum and abdomen are more closely clothed with similar hairs. The front tibia is bidentate, and the longer claw is cleft upon the front and middle feet.

♂. The extremity of the front tibia is moderately sharp, and the pygidium is rather more opaque than in the female.

♀. The apical tooth of the front tibia is long and very blunt.

Length, 20–21·5 mm.; breadth, 12–12·5 mm.

NICOBAR IS. (*G. Rogers*).

Type in the British Museum.

238. **Anomala malabariensis.**

Anomala malabariensis, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 195.

Testaceous, with the head, pronotum (except the lateral margins) and elytra olivaceous green, and the tibiæ and tarsi feebly metallic.

It is rather narrowly ovate, and moderately shining, with the upper surface densely subrugosely punctured. The elytra are more rugosely sculptured than the rest of the upper surface and have distinct longitudinal rows of larger punctures. The pygidium is rugosely punctured.

Length, 15–17 mm.

MADRAS: Malabar.

Types (♂ & ♀) in the Paris Museum.

A. malabariensis, Bl., is very similar to the following species, but smaller and more elongate, with the front angles of the prothorax sharper, the elytra with distinct rows of punctures larger than the rest, the pygidium densely rugose, and the tibiæ and tarsi slightly coppery, instead of green.

239. **Anomala chloronota.** (Plate II, fig. 5.)

Anomala chloronota, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 358.

Rather deep green, sometimes becoming olivaceous upon the elytra, with the extreme lateral margins of the pronotum, the

whole of the lower surface of the femora, and often the posterior part of the pygidium, yellow, with a faint metallic tinge, and the tibiæ and tarsi deep metallic green.

The body is compactly oval, convex and very densely punctured over the whole upper surface. The clypeus and forehead are very deeply and densely punctured, the clypeus broad and nearly straight in the middle. The pronotum and scutellum are finely punctured, the punctures very dense on the former and becoming coarser at the sides. The elytra are equally densely and rather more coarsely punctured, with slight indications of longitudinal rows of punctures, the marginal membrane being extremely narrow. The pygidium bears moderately close rugulose punctures and very scanty setæ, and the metasternum is densely punctured and thinly pubescent at the sides.

Length, 15–20 mm.; breadth, 9–11·5 mm.

CEYLON: Trincomali, Peradeniya, Mamadu and Hiniduma (*E. E. Green*, March–Nov.), Colombo (*T. B. Fletcher*, Jan.), Kelani Valley (*W. Braine*).

Type in the British Museum.

This species is one of the numerous, very closely similar forms of the "*Euchlora*" group related to *A. perplexa*, Hope. It is almost identical in size, shape and coloration with that species, but the membranous margins of the elytra are narrower and the pygidium less hairy.

240. **Anomala perplexa.** (Plate II, fig. 4.)

Euchlora perplexa, Hope, Proc. Zool. Soc. ii, 1839, p. 70; id., Mag. Nat. Hist. (2) iv, 1840, p. 348.

Bright pea-green above, with the lower surface, femora, the lateral margins of the pronotum and the posterior part of the pygidium orange. The anterior part of the pygidium is bright metallic green, and the tibiæ and tarsi are coppery, the front and middle ones frequently deep coppery-green.

It is oval, convex and moderately shining, and the pygidium and sides of the body beneath are clothed with fine soft pale yellow hair. The clypeus is nearly semicircular and finely rugose, and the forehead, vertex and pronotum are densely and deeply punctured, the sides of the pronotum being gently rounded and all its angles rather obtuse. The scutellum is well punctured, and the elytra bear close and deep but unequal-sized punctures, amongst which a few double longitudinal rows are indistinctly visible; the membranous margin is moderately broad behind. The pygidium is rather coarsely transversely rugose. The sides of the metasternum are densely punctured. The front tibia bears two strong teeth, and the longer claw of the front and middle feet is cleft.

♂. The terminal tooth of the front tibia is rather short and sharp, and the inner lobe of the inner front claw is strongly angulated at the middle of its lower edge.

♀. The terminal tooth of the front tibia is longer, blunter and more curved, and the pygidium is clothed with longer hair.

Length, 16–19 mm.; breadth, 9–11 mm.

BHUTAN: Maria Basti (*L. Durel*); SIKKIM: Darjiling, 7000 ft. (*Maj. Bennett*), Gopaldhara, Rungbong Valley (*H. Stevens*), Mungphu (*E. T. Atkinson*), Pedong (*Desgodins*), Gantok, 6000 ft.; NEPAL (*Maj.-Gen. Hardwicke*).

Type in the Oxford Museum; co-types in the British Museum.

In some specimens of this species there is a rather close clothing of fine decumbent silvery hairs upon the pygidium, but these are not generally apparent. They may perhaps be present only in freshly-emerged specimens.

241. **Anomala indistincta**, sp. nov. (Plate III, fig. 9.)

I have found myself obliged to separate from *A. perplexa*, Hope, this Assamese representative of it, although after a prolonged examination of numerous examples of both forms I am entirely unable to find any external difference whatever between them. The ædeagus of the male is very markedly different, the lateral lobes being simply rounded, without the abrupt excision near the tip seen in *A. perplexa*, and the median lobe broad and forming two widely-diverging processes anteriorly. Combined with the different habitat, this difference, which is sufficient for the immediate identification of every male specimen I have seen, renders it impossible to unite the two races.

Length, 16–19 mm.; breadth, 9·5–11 mm.

ASSAM: Sylhet, Naga Hills (*W. Doherty*), Helem (*Mitchell*, Dec.), Jorhat (*Desenne*, July), Mangaldai (*S. W. Kemp*, Oct.), Sibsagar (*S. E. Peal*); UPPER BURMA: Bhamo Hills, 4000 ft. (*F. M. Mackwood*, May).

Type in the British Museum.

242. **Anomala chloropus**, sp. nov. (Plate II, fig. 6.)

Apple-green, with a narrow lateral border to the pronotum, a **V**-shaped mark at the apex of the pygidium, the lower surface and femora golden yellow, and the tibiæ and tarsi deep metallic green.

Shortly oval, convex and very shining, with the upper surface closely and very finely punctured. The clypeus is broadly rounded, with the forehead densely and rugosely punctured. The sides of the pronotum are rounded, the front angles right angles, the hind angles very blunt, and the base not completely margined. The scutellum is finely punctured, and the elytra a little more strongly, with indefinite longitudinal rows of rather larger punctures. The pygidium is closely transversely strigose and sparsely hairy. The front tibia is strongly bidentate, and the longer claw of the front and middle feet cleft.

♂. The inner front claw is angularly dilated at the lower edge, and the hind tibia is more slender than in the female.

Length, 14·5–16 mm.; breadth, 8·5–10 mm.

BURMA: Karen Hills, 2800–3600 ft. (*L. Fea*).

Type in the Genoa Museum; co-type in the British Museum.

243. **Anomala peguensis**, sp. nov. (Plate II, fig. 2.)

Bright green, smooth and shining, with red-brown reflections, the lower surface and pygidium golden-red, and the tibiæ and tarsi dark metallic green.

The body is elongate-oval in shape, closely and very finely punctured above, and thinly clothed with short yellowish hair beneath. The clypeus is broadly rounded and finely granulated, the forehead finely rugosely punctured. The pronotum is strongly narrowed in front, the sides are strongly rounded, the front angles right angles and the hind angles very obtuse, the base trisinuated and not completely margined, the puncturation very fine, close and uniform. The scutellum is finely punctured, and the elytra finely and closely, with inconspicuous longitudinal lines of slightly larger punctures. The pygidium is shining and not very densely transversely striolated. The front tibia is strongly bidentate, and the longer claw of the front and middle feet cleft.

♂. The pygidium bears a few short scattered hairs.

♀. The pygidium is clothed with long erect hairs.

Length, 19–20 mm.; breadth, 10·5–11·5 mm.

BURMA: Pegu, Palon (*L. Fea*, Aug., Sept.).

Type in the British Museum; co-types in the Genoa Museum.

One male specimen of this species is of a dark purplish-brown colour above.

244. **Anomala chlorocarpa**, sp. nov. (Plate III, fig. 5.)

Brilliant deep emerald-green above, with the lower surface dark coppery and the tibiæ coppery green.

Oval, convex, very smooth and brilliant, with the metasternum densely and the pygidium and abdomen beneath thinly clothed with short whitish hairs. The clypeus is rounded and densely rugose, the forehead is densely and the vertex strongly punctured. The pronotum is moderately closely punctured, finely in the middle and rather more coarsely at the sides; the lateral margins are gently rounded, the front angles nearly right angles, the hind angles obtuse and the base not completely margined. The scutellum is finely punctured, and the elytra rather more coarsely but not strongly, and almost without a trace of longitudinal rows of punctures; the marginal membranes are well developed behind. The pygidium is rather coarsely transversely strigose. The legs are short and stout, the front tibia armed with two strong teeth, the hind tibia very stout, and the longer claw cleft on the front and middle feet.

♂. The inner front claw is angularly dilated beneath.

Length, 16–18 mm.; breadth, 9·5 mm.

Burma (*G. Q. Corbett*).

Type in the British Museum; co-type in Mr. H. E. Andrewes' collection.

This species is closely allied to *A. peguensis*, but is smaller and more smooth and shining above, the puncturation being less close, especially upon the pronotum. The female is unknown, but probably has the pygidium clothed with long hair, as in *A. peguensis*.

245. Anomala monochroa.

Anomala monochroa, Bates,* The Entomologist, xxiv, 1891, Suppl. p. 17.

Very deep green, with the lower surface and legs deep metallic green, sometimes with reddish reflections.

It is compactly oval and convex, with the sides of the body thinly clothed beneath with short golden hair. The clypeus is rugosely punctured, the forehead and pronotum very closely, and the elytra finely and rather closely, the punctures being denser at the sides. The apical margins of the elytra are narrow. The pygidium is densely and rather finely granular, and the sides of the metasternum are rather densely punctured. The front tibia is bidentate, and the longer claw of the front and middle tarsi is cleft.

♂. The teeth of the front tibia are short and sharp, and the longer claw of the front foot is bent at the base. The pygidium is very finely granular and almost opaque.

♀. The terminal tooth of the front tibia is longer and blunter, and the pygidium is rather more shining and less finely granulated.

Length, 24–27 mm.; breadth, 14–15 mm.

Burma: Malewoon (*L. Fea*, July and August); Malay Peninsula.

Type in M. René Oberthür's collection.

This species was described by H. W. Bates as taken at Kulu, in the Punjab; but as in the case of *Anomala holomelæna*, *Melolontha argus* and other insects enumerated in the same paper, a mistake seems to have been made as to the real place of origin. Probably specimens from the Malay Peninsula were accidentally mixed with those brought from Kulu.

246. Anomala chlorosoma, sp. nov. (Plate II, fig. 15.)

Uniform deep green above and beneath, the legs and lower surface slightly metallic.

Oval, convex, very smooth and shining. The head is strongly and closely punctured, the clypeus rather broadly rounded. The pronotum is finely punctured, densely at the sides, very lightly and minutely in the middle; the front angles are acute and the hind angles slightly obtuse. The elytra bear fine and irregular

punctures, which are very dense at the sides and extremities and rather scanty near the scutellum and suture; the outer margins are uniformly rounded and the membranous fringes not broad. The pygidium is finely and densely granulated. The front tibia is bidentate, and the longer front and middle claws are cleft.

♂. The teeth of the front tibia are very sharp, and the inner front claw is broad and blunt.

Length, 26 mm.; breadth, 14 mm.

PUNJAB: Kangra Valley (*G. C. Dudgeon*).

Type in the British Museum.

This is much more shining above and less closely punctured than *A. monochroa*, Bates, the only related species in which the legs and lower surface, as well as the upper surface, are uniformly green. A specimen in M. Oberthür's collection is labelled Khasia Hills, but probably in error.

247. **Anomala dimidiata.** (Plate II, fig. 16.)

Euchlora dimidiata, Hope,* Gray's Zool. Misc. 1831, p. 23.
Euchlora sulcata, Hope,* Mag. Nat. Hist. (2) iv, 1840, p. 349.
Var. *Anomala barbata*, Burm.,* Handb. Entom. iv, 2, 1855, p. 505.

Apple-green above (with a metallic lustre in var. *barbata*), the lower surface and legs blue-black or blue-green.

The shape is broadly oval and not very convex, and the sides of the body beneath are thinly clothed with reddish hair. The clypeus is densely punctured, the forehead rather less densely, and the eyes are not very prominent nor very convex above. The pronotum is finely and moderately closely punctured, except at the sides, where the punctures are rather coarse and confluent; it is short and broad, with the sides uniformly curved, the front angles not at all produced and the hind angles rounded. The scutellum is finely punctured, and the elytra finely and fairly closely, with slight traces of longitudinal lines, the marginal membrane being fairly broad at the outer part of the posterior margin. The pygidium is moderately finely transversely rugose.

♂. The teeth of the front femur are short and sharp.

♀. The teeth of the front femur are long and rather slender, and the pygidium is clothed all over with long tawny hair.

Var. *barbata*, Burm. This is metallic, sometimes brassy-green above, and generally of smaller size than the typical form.

Length, 19–26 mm.; breadth, 11·5–15 mm.

NEPAL (*Maj.-Gen. Hardwicke*—type); KASHMIR: Campbellpore; PUNJAB: Kulu, Kangra Valley (*G. C. Dudgeon*, July), Simla (Pusa Coll.); UNITED PROVINCES: Chawai (*Guran Ditta Mal*, Aug.), Naini Tal, 6000 ft. (Indian Museum); BENGAL: Pusa (*H. M. Lefroy*, July), Maldah (*W. H. Irvine*), W. Almora, Ranikhet (*H. G. Champion*); SIKKIM: Mungphu (*E. T. Atkinson*); ASSAM: Shillong, Manipur (*W. Doherty*), Khasi Hills (*B. Warren*, May).

Type in the British Museum; that of *E. sulcata* in the Oxford Museum and that of *A. barbata* in the Halle Museum.

The female is very easily recognized by the very hairy pygidium,

and the metallic variety *barbata* cannot be confused with any other species. This variety is very remarkable in a group strikingly constant, as a rule, in colour.

This species has been taken amongst the roots of Motha at Pusa in June.

248. **Anomala dussumieri.** (Plate II, figs. 9 & 10.)

Anomala dussumieri, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 194.

Bright emerald-green, with the lateral margins of the pronotum, the lower surface of the body, the femora and frequently the sides or the whole of the pygidium, yellowish, with a green or golden suffusion, and the tibiæ and tarsi coppery green.

It is oval in shape, very smooth and shining. The clypeus is rugosely, and the forehead densely, punctured, the former well rounded at the sides. The pronotum is finely and closely punctured, rather more strongly and densely at the sides; the lateral margins are gently rounded, with the front angles almost right angles, and the hind angles well marked but obtuse. The scutellum is finely punctured, and the elytra finely, but not closely, with scarcely traceable longitudinal lines; there is a very narrow lateral flange and the membranous margin is also very narrow. The pygidium is finely and closely transversely strigose and bears a very few fine long hairs. The sides of the metasternum are closely punctured and thinly clothed with short yellowish hairs. The front tibia is armed with two teeth, and the larger claw is cleft on the front and middle feet.

♂. The terminal tooth of the front tibia is sharp and nearly straight, and the lower lobe of the inner front claw slightly dilated.

♀. The term nal tooth of the front tibia is more curved and less acute.

Length, 24–26 mm.; breadth, 13–15 mm.

CEYLON: Colombo, Kandy; MADRAS: Cochin (*T. V. Ramakrishna*, June), Ernakulam (*F. H. Gravely*, Sept.), S. Kanara, Udipi (*Pfleiderer*, Nov.).

Type in the Paris Museum.

This species is evidently the one referred to in a pamphlet "All about Grub," published in Ceylon by Mr. R. C. Haldane in 1881, in which it is said to be very destructive to cinchona leaves in that island, especially to *Cinchona succirubra*.

249. **Anomala chlorophylla,** sp. nov. (Plate II, fig. 8.)

After a most prolonged endeavour, I have failed to find any really tangible external difference between this and *A. dussumieri*, although it is impossible to unite them on account of the difference in the ædeagi of the males, as well as their widely separated habitats. The sculpture of the pygidium is perhaps a shade finer and closer in *A. chlorophylla* and the membranous fringe at the extremity of the elytra is a little more conspicuous. The real

relationship is rather to *A. grandis*, the ædeagus having a long median lobe without lateral prolongations.

Length, 26–30 mm.; breadth, 14·5–16 mm.

BURMA: Theinzeik (*P. Loizeau*), Palon, Pegu (*L. Fea*, Aug., Sept.), Bhamo (*L. Fea*, Aug.), Moulmein (*L. Fea*, May).

Type in the British Museum; co-types in the Genoa Museum and in M. René Oberthür's collection.

250. Anomala cupripes. (Plate II, fig. 17.)

Euchlora cupripes, Hope,* Proc. Zool. Soc. vii, 1839, p. 68.

Bright green, with the clypeus, sides of the pronotum, lower surface, legs and apex of the pygidium fiery-red.

Oval, convex, smooth and shining. The head is densely punctured, the clypeus subrugosely, with its front margin almost straight in the middle and rounded at the sides. The pronotum and elytra are very finely punctured, the former closely and the latter less closely. The pygidium is finely and closely transversely rugulose and bears a few inconspicuous but moderately long hairs. The front tibia is bidentate, the hind tibia short and stout, and the longer claw cleft on the front and middle feet.

♂. The inner front claw is a little dilated, the terminal tooth of the front tibia is sharper and shorter than in the female, and the hind tibia rather longer and not dilated at the extremity.

Length, 22–29 mm.; breadth, 13–16 mm.

BURMA: Theinzeik (*P. Loizeau*), Ataran Valley (*Lord Dormer*, Dec.), Tenasserim; SIAM: Renong (*W. Doherty*); ANNAM (*J. J. Vassal*); MALAY PENINSULA; BORNEO; JAVA.

Type in the Oxford Museum.

This insect has the closest similarity to *A. dussumieri*, Bl. The colour of the upper surface is a rather deeper shade of green, it is a little more closely punctured and therefore less shining, and the pygidium is more finely and densely rugulose and more metallic. The ædeagus of the male is quite different in shape, the median lobe having very long terminal processes.

251. Anomala grandis. (Plate II, fig. 7.)

Euchlora grandis, Hope,* Mag. Nat. Hist. (2) iv, 1840, p. 284.

Bright green above, and very smooth and shining, with the extreme outer margins, the lower surface and legs golden green or coppery.

It is a large species, oval and convex in shape. The entire upper surface is moderately finely and closely punctured, the clypeus rather rugosely. The latter is short and transverse, with the front edge nearly straight in the middle. The pronotum has the sides gently and uniformly rounded, the front angles nearly right angles and the hind angles very blunt. The punctures of

the scutellum are very fine, and those of the elytra rather unequally distributed: there is a very narrow outer marginal flange, which ends abruptly before reaching the apex, and the membranous margin is narrow. The pygidium is finely granulated. The sides of the metasternum are very densely punctured and clothed with short and rather inconspicuous yellowish silky hair. The front tibia bears two teeth, and the longer claw of the front and middle feet is cleft.

♂. The pygidium is densely granulated and rather opaque. The two teeth of the front tibia are short and sharp, and the inner front claw is a little dilated.

♀. The pygidium is shining and a little less densely granulated than that of the male, and the terminal tooth of the front tibia is long and curved.

Length, 27–30 mm.; breadth, 15·5–18 mm.

MADRAS: Ganjam District, Berhampur (*E. T. Atkinson*); BENGAL: Sahibganj; ASSAM: Sibsagar (*S. E. Peal*), Goalpara, Sylhet; BURMA: Moulmein.

Type in the Oxford Museum.

252. **Anomala rhodomela**, sp. nov. (Plate II, fig. 12.)

Olivaceous green, with a rosy red suffusion above, the pygidium coppery, the lower surface and the femora metallic green or coppery, the tibiæ and tarsi dark blue.

The body is very convex and globular, smooth and shining above. The clypeus is rather broad, finely rugosely punctured, with the front margin straight in the middle, the forehead being finely and a little less closely punctured. The pronotum is finely and closely punctured, very shining in the middle, more strongly and densely punctured at the sides; the lateral margins are gently curved, the front angles right angles and the hind angles blunt. The scutellum bears a few minute punctures, and the elytra are very shining, with scattered minute punctures and traces of paired lines, which become well marked towards the posterior margins, the membranous margin being narrow and inconspicuous. The pygidium is finely granular and opaque, and the sides of the metasternum are closely punctured and clothed with extremely short pubescence. The front tibia is bidentate, and the longer claw of the front and middle feet is cleft.

♂. The pygidium is deeply and densely granular and entirely opaque.

♀. The pygidium is less deeply sculptured and a little more shining.

Length, 23–28 mm.; breadth, 13·5–17 mm.

ANDAMAN IS. (*Roepstorff*, *Capt. Wimberley*, *E. T. Atkinson*), Port Blair (*E. H. Man*, *D. Giglioli*, *S. Kemp*, Feb., March).

Type in the British Museum; co-types in the Indian Museum, Calcutta, and the Genoa Museum.

253. **Anomala chlorochelys.** (Plate II. figs. 13 & 14.)

Anomala chlorochelys, Arrow, Ann. Mag. Nat. Hist. (8) x, 1912, p. 340.

Bright green, with the lower surface, legs and extreme edges of the head, pronotum and elytra golden-red.

It is a large, very shining, oval and convex species. The clypeus is rounded and closely punctured, the forehead more finely and less closely. The pronotum is very finely and closely punctured, a little more strongly at the sides. The elytra are very shining, finely and lightly punctured, with the outer margins conspicuously dilated towards the extremity and truncate behind, forming an obtuse external angle; the membranous margins are narrow and almost concealed by the lateral dilatation. The pygidium is submetallic and transversely rugulose.

♂. The two teeth of the front tibia are sharp and close together.

♀. The two teeth of the front tibia are less sharp and close together, and the pygidium bears a few long scattered hairs.

Length, 26–29 mm.; breadth, 15–16·5 mm.

BURMA: Bhamo (*T. Selkirk*, *L. Fea*, June), Teinzo (*L. Fea*, May), Tenasserim, Papun (*Col. Adamson*).

Type in the British Museum.

The species resembles *A. truncata*, Bates, but is larger and much more smooth and shining.

254. **Anomala rufiventris.**

Anomala rufiventris, Redt.,* Hügel's Kaschmir, iv, 2, 1848, p. 526.
Anomala striolata, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 195.
Anomala lævissima, Burm.,* Handb. Entom. iv, 2, 1855, p. 506.

Very dark bronzy green, with the sternum and legs greenish black and the abdomen beneath deep mahogany-red.

The body is elongate-oval in shape, not very convex and extremely smooth and shining. The sides of the mesosternum are thinly clothed with decumbent yellowish hair, and the pygidium bears a few very long and erect hairs. The clypeus is short and very minutely punctured, with the margin nearly straight in front and the posterior suture deep and nearly straight. The forehead bears similar but more scattered punctures, and the pronotum is thinly and very minutely, but rather equally, punctured; it is short, with the sides angulated near the middle, the front angles acute, the hind angles well-marked and slightly obtuse, and the base gently trisinuate, with a marginal line interrupted in the middle. The scutellum is scarcely punctured, and the elytra bear inconspicuous lines of extremely minute punctures; the humeral and apical callosities are prominent, the apical margins nearly vertical, and the marginal membranes very broad and conspicuous, especially at the posterior part of the sides. The pygidium is very smooth and shining in the middle, finely and rather rugosely

punctured at the sides. The mesosternum is not produced. The front tibia is bidentate, the upper tooth rather slight. The front tarsi and all the claws and claw-joints are long, the longer claw of the front and middle feet deeply cleft.

♂. The antennæ are rather long, the terminal tooth of the front tibia is rather sharp, and the inner front claw a little dilated and very acute.

Length, 14–23 mm.; breadth, 8–12 mm.

UNITED PROVINCES: W. Almora, Ranikhet (*H. G. Champion*); ASSAM: Kurseong (*Verschraeghen*), Manipur (*W. Doherty*), Khasi Hills, Nongpriang (*B. Warren*), Jaintia Hills; SIKKIM: Darjiling, Mungphu (*E. T. Atkinson*), Peshoke Spur (*R. S. Lister*); BHUTAN: Maria Basti (*L. Durel*).

Type in the Vienna Museum; that of *A. striolata* in the Paris Museum and that of *A. lævissima* in the Halle Museum.

SECTION V.

Key to the Species.

1 (4)	Elytra very shining, with microscopic puncturation.	
2 (3)	Pronotum scarcely punctured	*merula*, sp. n., p. 237.
3 (2)	Pronotum closely punctured	*trochanterica*, sp. n., p. 238.
4 (1)	Elytra coarsely punctured	*validipes*, sp. n., p. 239.

255. **Anomala merula**, sp. nov.

Entirely black above and beneath, and very smooth and shining.

It is elongate in shape, broad at the shoulders and attenuated at each end. The head is finely and closely punctured, with the clypeus broadly transverse, straight in front and rounded at the sides. The pronotum is narrow, little wider than it is long, broadest at the base, which is rather evenly rounded and not margined, and tapering to the front, which is very narrow; the sides are strongly curved, subangulate in the middle, with all the angles sharp and nearly right angles; the surface is very minutely and inconspicuously punctured, except at the sides, where the punctures are moderately strong. The scutellum is also minutely and inconspicuously punctured and rather short. The elytra are very smooth, with almost obsolete lines of minute punctures. The pygidium is finely transversely rugose. The mesosternum is not produced. The sides of the metasternum are densely punctured and clothed with very fine greyish pubescence. The

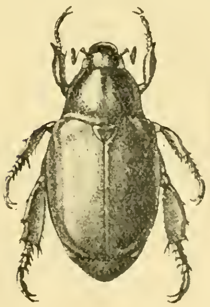

Fig. 52.—*Anomala merula*.

legs are not long, the hind ones very stout; the front tibia bears a long curved terminal tooth and a very feeble upper one, the hind femur is short and broad, the hind tibia and tarsus short and thick, and the longer claw is cleft on the front and middle feet.

♂. The terminal tooth of the front tibia is rather shorter and sharper, and the lower lobe of the inner front claw is broad and angulated beneath.

Length, 20–25 mm.; breadth, 10·5–14 mm.

ASSAM: Naga Hills (*W. Doherty*).

Type in the British Museum.

This resembles no species known to me except *A. holosericea*, Bates, a native of the Malay Peninsula, wrongly attributed, in my opinion, to the Punjab by the describer, like others in the same paper. *A. merula* is very easily recognizable by its smooth black surface, narrow tapering prothorax and massive hind legs.

256. **Anomala trochanterica**, sp. nov.

Black, smooth and shining, with a very faint purplish lustre upon the elytra.

It is elongate in shape, with the prothorax narrow and strongly attenuated in front, and the hind legs very strong and massive. The head is evenly and rather closely punctured and the clypeal margin regularly rounded. The prothorax is narrow, widest at the base, where it is narrower than the elytra at the shoulders; the sides are angulated before the middle and almost straight from that point to the front and hind angles, all of which are blunt, but appear acute as seen from above; the base is not completely margined. The pronotum is finely and closely punctured, the puncturation becoming stronger at the sides. The scutellum bears a few fine punctures, and the elytra bear faint longitudinal lines of very minute punctures. The pygidium is finely and closely transversely strigose. The sides of the metasternum are clothed with a rather fine and close short yellowish pubescence. There is no sternal process. The front tibia has a long straight terminal tooth and a very feeble upper one; the hind femur is very thick and strongly arched, the trochanter produced as a narrow process at its extremity, the tibia very short and thick and the tarsus broad and rather short; the longer claws of the front and middle feet are cleft.

♂. The inner front claw is rather abruptly dilated near its base.

♀ unknown.

Length, 18 mm.; breadth, 10 mm.

SIKKIM: Gopaldhara, Rungbong Valley, 6300 ft. (*W. K. Webb*).

Type in the British Museum.

257. **Anomala validipes**, sp. nov. (Plate III. figs. 14 & 15.)

Deep pitchy-red, with the head, pronotum, scutellum, and hind tibiæ and tarsi almost black, the upper surface suffused with a scarcely perceptible metallic lustre.

Broadly spindle-shaped, convex, smooth and shining, with very stout hind legs. The head is finely and not very closely punctured, nearly smooth in the middle of the forehead, the clypeus short, broad and rectangular, with the front edge nearly straight. The pronotum is narrow, finely punctured, a little more coarsely at the sides, with a narrow smooth median line; the sides are strongly convergent, the lateral margins incurved, the front angles not very sharp, the hind angles very obtuse, and the base completely margined and broadly rounded. The scutellum is blunt and well punctured, and the elytra dilate to a little behind the shoulders and narrow from there to the end; they are deeply and rather coarsely striate-punctate, with the subsutural interval rather broad and irregularly punctured. The pygidium is transversely strigose. The sides of the body are clothed beneath with rather fine and close greyish pubescence. The front tibiæ are bidentate, with the upper tooth rather feeble; the hind legs are very strong and massive, with short and stout tibiæ and tarsi, and the longer claw of the front and middle feet is cleft.

♂. The terminal tooth of the front tibia is short and sharp, and the inner front claw very short and broad but sharply pointed.

♀ unknown.

Length, 20 mm.; breadth, 11 mm.

ASSAM: Goalpara.

Type in the British Museum.

This species is very close to *A. holosericea*, Bates, said to come from the Punjab, but found by Doherty in the Malay Peninsula. The elytra are much more strongly punctured than in that form and the head more lightly.

SECTION VI.

Key to the Species.

1 (48)	Mesosternal process elongate and pointed.	
2 (3)	Front tibia without lateral teeth; meso-metasternal suture distinct .	*rosetti*, Nonfr., p. 241.
3 (2)	Front tibia bidentate; meso-metasternal suture obliterated.	
4 (19)	Body long and narrow.	
5 (10)	Upper surface green.	
6 (9)	Entirely shining and metallic.	
7 (8)	Lateral margins of the elytra narrow; fiery-red stripe interrupted. .	*auronitens*, Hope, p. 242.
8 (7)	Lateral margins of the elytra broad; fiery-red stripe continuous	*pterygophorus*, Oh., p. 243.

9 (6)	Elytra not shining nor metallic....	*stoliczkæ*, Sharp, p. 243.
10 (5)	Elytra orange-yellow.	
11 (14)	Lateral margins of the elytra flattened behind the shoulders.	
12 (13)	Front margin of the clypeus strongly reflexed	*xanthonota*, sp. n., p. 244.
13 (12)	Front margin of the clypeus feebly reflexed	*amphilissa*, sp. n., p. 245.
14 (11)	Lateral margins of the elytra not distinctly flattened behind the shoulders.	
15 (16)	Pygidium not tumid	*chrysochroma*, sp. n., [p. 246.
16 (15)	Pygidium tumid.	
17 (18)	Pygidium entirely hairy, dark-coloured	*xanthochroma*, sp. n., [p. 246.
18 (17)	Pygidium not entirely hairy, light-coloured	*tumidicauda*, Arr., p. 247.
19 (4)	Body oval, not long and narrow.	
20 (27)	Elytra not sulcate.	
21 (22)	Not very short or convex; pronotum not visibly punctured	*princeps*, Kr., p. 248.
22 (21)	Very short and convex; pronotum punctured.	
23 (24)	Body without close setæ above	*chloromela*, Arr., p. 249.
24 (23)	Pygidium and extremities of the elytra closely setose.	
25 (26)	Green; pronotum lightly punctured.	*gemmula*, Arr., p. 249.
26 (25)	Coppery; pronotum strongly punctured	*agnella*, Arr., p. 250.
27 (20)	Elytra sulcate.	
28 (29)	Sternal process acute but very short.	*oculicollis*, Arr., p. 251.
29 (28)	Sternal process long and slender.	
30 (31)	Elytra unicolorous	*regina*, Newm., p. 252.
31 (30)	Elytra bicolorous.	
32 (33)	Pygidium very smooth and shining .	*maduræ*, Arr., p. 252.
33 (32)	Pygidium punctured.	
34 (35)	Sides of the pronotum rugose......	*rugilatera*, Arr., p. 253.
35 (34)	Sides of the pronotum not rugose.	
36 (37)	Sternal process not strongly curved .	*degenerata*, Arr., p. 254.
37 (36)	Sternal process strongly curved.	
38 (45)	Head and thorax strongly metallic.	
39 (44)	Legs and lower surface pale.	
40 (43)	Pale border of the pronotum single.	
41 (42)	Hind femora unarmed	*strigata*, Cast., p. 255.
42 (41)	Hind femora strongly toothed (♂) or angulated (♀) beneath	*armata*, Arr., p. 255.
43 (40)	Pale border of the pronotum duplicated	*vittilatera*, sp. n., p. 256.
44 (39)	Legs and lower surface dark	*varia*, Newm., p. 257.
45 (38)	Head and thorax feebly metallic.	
46 (47)	Elytra deeply sulcate	*rachelæ*, sp. n.. p. 258.
47 (46)	Elytra lightly punctate-striate	*nigroscripta*, sp. n., p. 259.
48 (1)	Mesosternal process very short and blunt.	
49 (50)	Mesosternal process large, rounded and produced downwards	*ebena*, Burm., p. 259.

50 (49)	Mesosternal process not large, rounded, nor produced downwards.	
51 (54)	Rather large; pronotum and elytra uniformly coloured.	
52 (53)	Strongly punctured above; very convex	*isolata*, sp. n., p. 260.
53 (52)	Minutely punctured above; not very convex	*pyroscelis*, Hope, p. 261.
54 (51)	Small; pronotum and elytra dissimilarly coloured.	
55 (56)	Pronotum clothed with long erect hairs	*festiva*, sp. n., p. 261.
56 (55)	Pronotum not hairy.	
57 (64)	Pygidium not densely clothed with hair.	
58 (59)	Pronotum scarcely punctured	*erythroptera*, Kr., p. 262.
59 (58)	Pronotum strongly punctured at the sides.	
60 (61)	Lower surface pale; pygidium shining	*pusilla*, Arr., p. 263.
61 (60)	Lower surface dark; pygidium dull.	
62 (63)	Mesosternal process not at all produced	*parva*, sp. n., p. 264.
63 (62)	Mesosternal process slightly produced.	*dohertyi*, sp. n., p. 264.
64 (57)	Pygidium densely clothed with grey hair.	
65 (68)	Femora and tibiæ yellowish.	
66 (67)	Larger; pronotum of the same sex less strongly sculptured	*moorei*, Kr., p. 265.
67 (66)	Smaller; pronotum of the same sex more strongly sculptured	*flavipes*, sp. n., p. 266.
68 (65)	Tibiæ dark-coloured	*lateralis*, Hope, p. 267.

258. Anomala rosetti.

Mimela rosetti, Nonfr., Wien. Ent. Zeit. ix, 1890, p. 76.
Spileuchlora rosetti, Ohaus, Deutsche Ent. Zeits. 1903, p. 209.
? *Mimela pyropus*, Nonfr. l. c. p. 77.
? *Hoplolontha paviei*, Fairm., Mission Pavie, ii, 1904, p. 87, pl. ix bis, fig. 3.

Deep shining metallic green or golden-green, sometimes slightly opalescent upon the elytra.

It is large, elongate-oval, very smooth above and beneath, with scanty yellowish hairs at the sides of the body beneath and a few minute setæ upon the pygidium. The clypeus and forehead are densely and rugosely punctured, the vertex more finely. The pronotum is very finely and inconspicuously punctured, except at the sides, where the punctures are moderately strong and close; the lateral margins are strongly curved, much narrowed to the front, the front angles right angles, the hind angles obtuse and the base gently trisinuate. The scutellum is rather small, acute at the apex and scarcelypunctured. The elytra are finely and irregularly punctured, without longitudinal rows. The pygidium is rather coarsely rugose, with a few minute setæ. The metasternum is

smooth, slightly depressed in the middle and closely punctured at the sides; the abdomen is smooth in the middle and rugosely punctured at the sides. The mesosternal process is strong, straight and sharply pointed. The front tibia is straight, sharply pointed at the end and without trace of a lateral tooth, the hind tibia is moderately long and stout, and the longer claw is cleft upon the front and middle feet.

I have not seen a male.

Length, 27–33 mm.; breadth, 15–18 mm.

BURMA: Mulmein (*E. T. Atkinson*); SIAM: Laos.

Types of Nonfried in Dr. F. Ohaus' collection; that of *H. paviei* in the Paris Museum.

This appears to be a very variable insect both in size and colour. The few female specimens, which are all I have yet seen, differ greatly in size, but none of them reaches the size given by Nonfried (40 to 42 mm.). They are green or golden green, one of them having a tinge of red in certain lights. But it is probable that the rosy and purplish specimens called "*Mimela*" *pyropus* by Nonfried also belong to the same species, and judging by the figure quoted above, this is probably also the form associated by Fairmaire with Australian and American genera under the name of *Hoplolontha paviei*. Both descriptions, however, are entirely unreliable.

259. Anomala auronitens.

Mimela auronitens, Hope,* Trans. Ent. Soc. Lond. i, 1835, p. 114.
Anomala (*Spilota*) *auronitens*, Burm., Handb. Ent. iv, 2, 1855, p. 504.
Callistethus consularis, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 198.

Very smooth and shining, deep metallic green above and nearly black beneath, with the head golden-green, and an undefined patch on each side of the pronotum, one at the shoulder of the elytron, and usually another behind the latter, golden red.

The body is long and narrow, with the sides of the elytra almost parallel. The head, pronotum and scutellum are almost devoid of punctures, the clypeus transversely rectangular, with the angles rounded, and the clypeal suture deep and straight. The prothorax is short, gently rounded at the sides, with the lateral pit almost obliterated and the lateral groove very short and shallow beyond the front and hind angles. The elytra are very feebly punctured, some of the punctures forming longitudinal lines. The pygidium has a few scattered punctures on each side of the middle line, bearing long grey hairs. The metasternum is smooth in the middle, densely and finely punctured and clothed with short silky hairs at the sides; the abdomen is almost smooth, but bears tufts of hair at the sides and apex. The mesosternal process is slender and strongly curved. The front tibia bears a minute lateral tooth.

♂. The club of the antenna is moderately long, the apical tooth of the front tibia very sharp, and the abdomen narrowly

channelled beneath. The spurs of the hind tibia are of normal length.

Length, 12–18 mm.; breadth, 6·5–9 mm.

SIKKIM: Kurseong (*Verschraeghen*), Mungphu (*E. T. Atkinson*); ASSAM: Manipur (*W. Doherty*), Khasi Hills (*Dr. Griffith*); BURMA: Ruby Mines (*W. Doherty*).

Type in the Oxford Museum; that of *C. consularis* in the Paris Museum.

260. Anomala pterygophora.

Callistethus pterygophorus, Ohaus, Deutsche Ent. Zeits. 1903, p. 217.

Very smooth and shining, brilliant golden-green above and nearly black beneath, with the head golden, an undefined golden-red patch on each side of the pronotum, and a brilliant fiery-red lateral band extending from the base to the apex of each elytron.

The body is long and narrow, with the sides of the elytra almost parallel and distinctly explanate anteriorly. The head, prothorax and scutellum are almost devoid of punctures, the clypeus transversely rectangular, with the angles rounded, the clypeal suture deep and straight, and the eyes large. The prothorax is short, strongly rounded at the sides, with a deep lateral pit on each side, and the lateral groove deep and continuous to about one-third of the front and hind margins. The elytra are very finely punctured on the disc, but more strongly at the sides. The pygidium bears two patches of close punctures on each side of the middle line, the punctures bearing long yellow hairs. The metasternum is smooth in the middle, densely and finely punctured and clothed with short silky hairs at the sides; the abdomen is almost smooth, but bears tufts of hair at the sides and apex. The mesosternal process is slender and strongly curved. The front tibia bears an inconspicuous lateral tooth.

♂. The club of the antenna is as long as the foot-stalk, the apical tooth of the front tibia very acute, and the abdomen broadly hollowed beneath. The two spurs of the hind tibiæ are very long and slender, the upper one longer than the first two joints of the tarsus, strongly curved and clubbed at the end.

Length, 12–16 mm.; breadth, 6·5–8·5 mm.

SIKKIM: Kurseong (*Verschraeghen*), Gopaldhara, Rungbong Valley (*H. Stevens*), Gantok; BHUTAN (*L. Durel*).

Type in Dr. Ohaus' collection.

This is extremely like the preceding species, but may be distinguished by its more vivid colouring, more dilated elytral margins, and especially by the remarkable hind tibial spurs of the male.

261. Anomala stoliczkæ. (Plate I, fig. 3.)

Anomala (*Callistethus*) *stoliczkæ*, Sharp, Journ. Roy. Asiatic Soc. Bombay, xlvii, 2, 1873, p. 173.

Callistethus seminitidus, Fairm., Ann. Soc. Ent. France, 1889, p. 25; Ohaus, Deutsche Ent. Zeits. 1903, p. 221.

Brilliant metallic green or golden-green above and beneath, with the elytra non-metallic pea-green and not very shining, the humeral and apical calli of each shining ruby-red.

The body is moderately elongate, not very convex, and clothed with short pale hairs at the sides beneath. The head, pronotum and scutellum are not perceptibly punctured; the clypeus broad and transversely rectangular, with the margin strongly reflexed, nearly straight in front, the angles rounded, the suture deep and pitted on each side. The pronotum has the front angles a little produced, the hind angles obtuse, and the posterior lobe broad and truncate. The elytra are closely punctured and show well-marked paired longitudinal lines, the outer margins being rather broadly flattened from the shoulders to considerably beyond the middle. The pygidium is finely rugose at the base and extreme apex, and deeply impressed on each side. The mesosternum is smooth in the middle, and finely and densely punctured at the sides; the abdomen is irregularly punctured at the sides. The mesosternal process is strongly curved, slender and acute. The front tibia is acute at the apex and without a lateral tooth.

♂. The front tibia and tarsus are much shorter and thicker than those of the female, the inner front claw strongly dilated, and the longer spur of the hind tibia elongated, strongly curved and knobbed at the end.

Length, 14 mm.; breadth, 7·5 mm.

PUNJAB: Murree; UNITED PROVINCES: Jaunsar; SIKKIM: Darjiling, 7000 ft. (Indian Museum); TIBET; W. CHINA: Szechuen, Siao-Lu.

Type in the Indian Museum; that of *C. seminitidus* in the Paris Museum (?).

262. **Anomala xanthonota**, sp. nov.

Bright yellow above, the head, pronotum, scutellum and pygidium suffused with metallic lustre; the head golden, the pronotum and scutellum rosy; the sides of the former and the pygidium tinged with green. The legs and lower surface are deep metallic green, the abdomen purplish green.

Fig. 53.—*Anomala xanthonota.*

It is oval and a little depressed, with the clypeus broad, and its margin very strongly reflexed and nearly straight in front. The head is lightly punctured, a little more strongly upon the clypeus, and the pronotum and scutellum still more finely and scantily, the punctures being irregular, except a subsutural and three paired series placed rather far apart on the elytra, the outer margins of which are flattened and dilated behind the shoulders. The pygidium is very shining, with sparse punctures, which are very fine in the middle

but become coarse at the sides; it bears a few long erect hairs towards the apex. The sternum is clothed with not very thick grey hair at the sides, and smooth in the middle. The mesosternal process is extremely slender and sharp, but not quite so long as in *A. tumidicauda*. The front tibia is bidentate, and the longer claw is cleft in the front and middle feet.

♂. The teeth of the front tibia are straight, oblique and sharp, and the longer claw is broad and minutely cleft.

♀. The apical tooth of the front tibia is long, curved and blunt.

Length, 13–17 mm.; breadth, 7–9 mm.

PUNJAB: Dalhousie (*H. J. Barrow*, *Col. Newham*, Jan., June).

Type in the British Museum.

263. **Anomala amphilissa**, sp. nov.

Deep metallic green, with the head, pronotum and scutellum fiery-red and the elytra orange-yellow, the whole surface, except the elytra, suffused with metallic lustre. The lateral margins of the pronotum are deep blue-green.

It is elongate-oval in shape and moderately convex. The head and pronotum are very smooth and shining, with very minute and scanty punctures, the clypeus rectangular, with its margin strongly reflexed, and the eyes large and prominent. The sides of the pronotum are not rounded, strongly convergent in front, slightly divergent behind; the front angles are acutely produced, the hind angles right angles, and the base not margined. The scutellum is very blunt, and the elytra are finely punctured, some of the punctures forming double rows; the outer edge forms a conspicuous horizontal flange from the shoulder to the middle, the membranous margin is well-developed from the middle of the flange to the sutural angle, and the apical margin is a little sinuated. The pygidium is very smooth and shining, convex and clothed with long but not numerous erect hairs upon its posterior part. The sides of the body beneath are clothed with rather long greyish hair, and the mesosternal process is acute and nearly straight. The upper tooth of the front tibia is very feeble, the hind tibia slender, and the longer claw cleft on the middle and hind feet.

♂. The club of the antenna is long, the front tibia acute at the end, the inner front claw uniformly dilated, and the abdomen hollowed beneath.

♀ unknown.

Length, 13 mm.; breadth, 7 mm.

NEPAL (*Maj.-Gen. Hardwicke*).

Type in the British Museum.

The unique type seems not to have been distinguished by Hope from *Mimela bicolor*, which it resembles in coloration, though not at all in shape.

264. **Anomala chrysochroma**, sp. nov.

Orange-yellow above, with a golden-green suffusion, and deep metallic green upon the pygidium, lower surface and legs. There is a small deep blue-green stripe just within the margin of the pronotum on each side, touching the front but not the hind margin, the foot-stalk of the antenna is orange-coloured and the club nearly black.

It is elongate-oval in shape, convex, and very smooth and shining above. The head, pronotum and scutellum are very scantily and minutely punctured, the eyes widely separated, the clypeus broad, with its margin straight in front and not very strongly reflexed. The pronotum is a little more strongly punctured near the front angles, which are acute, the hind angles are nearly right angles and the base is not margined. The elytra are not distinctly flattened at the outer margins, the membranous margin is distinct from a little behind the shoulder to the apex, and the puncturation is almost obsolete. The pygidium is finely and scantily punctured and bears a few long hairs near its apex. The body is arched beneath. The sides of the metasternum and abdomen are thinly clothed with moderately long greyish hair, and the mesosternal process is rather long and slender and scarcely curved. The legs are slender, the front tibia armed with a feeble external tooth, the longer front and middle claws cleft. The antennæ are very long and slender.

I know only a single female specimen.

Length, 15 mm.; breadth, 8 mm.

Burma: Ruby Mines (*W. Doherty*).

Type in the British Museum.

265. **Anomala xanthochroma**, sp. nov.

Orange-yellow, with the head, pronotum and scutellum fiery red, the clypeus golden-green, the lateral margins (with the exception of the hind angles) of the pronotum deep bluish-green, and the lower surface, pygidium and legs dark coppery-green.

Rather narrowly elongate in shape, and not very convex, with long slender legs; the head, pronotum and scutellum very brilliant. The clypeus is feebly rugose and shining, with its margin strongly reflexed and slightly excised in the middle. The forehead and vertex are finely and sparsely punctured, and there is a fringe of long hairs at the inner edge of each eye. The pronotum and scutellum are scantily and extremely finely punctured, the former gently rounded at the sides, with the front angles acute and the hind angles obtuse but well-marked. The elytra have two slightly elevated smooth dorsal costæ, bordered by lines of punctures, and the alternating intervals, of which the subsutural one is very broad, are moderately closely punctured. The pygidium is tumid, smooth and shining, and entirely clothed with long, erect, but not dense, pale hair, and the body is similarly clothed beneath. The mesosternal process is straight, moderately

long and extremely sharp. The legs are long and slender, the front tibia bearing only a feeble lateral tooth, the hind tibia widest near the middle, and the longer claw of the front and middle tarsi cleft.

♂. The club of the antenna is long, the apex of the front tibia is sharp, and the inner front claw is broad and deeply cleft.

♀ unknown.

Length, 14 mm.; breadth, 7·5 mm.

ASSAM (*Col. W. F. Badgley*).

Type in the British Museum.

266. **Anomala tumidicauda.**

Anomala (*Callistethus*) *tumidicauda*, Arrow, Ann. Mag. Nat. Hist. (8) ix, 1912, p. 83.

Reddish orange, with the legs and lower surface metallic green, the head, prothorax and scutellum suffused with crimson or golden red, the pygidium with a pale greenish lustre, and the lateral margins of the prothorax having a narrow patch of a deep violet colour.

The body is oblong, very smooth, shining and moderately convex. The head, pronotum and scutellum are extremely smooth, with scarcely perceptible punctures; the clypeus is broad, narrowed slightly to the front margin, which is nearly straight and gently reflexed, and the clypeal suture is well-marked and nearly straight. The pronotum is broad at the base and strongly narrowed to the front, with the sides scarcely curved but feebly angulated before the middle, the front angles very acute, the hind angles almost right angles, the base rather prominent in the middle and not margined. The elytra are smooth and very minutely punctured, some of the punctures forming double rows upon the outer part; the outer margins are slightly flattened behind the shoulders for less than one-third of their length. The pygidium is extremely smooth and glossy and conically protuberant before the extremity, and there are a very few erect hairs in its hinder part. The mesosternal process is slender, strongly curved and acute. The mesosternum is closely punctured and shortly pubescent at the sides, and smooth in the middle; the abdomen is smooth, with scanty pubescence at the sides. The front tibia is bidentate, and the longer claw of the front and middle feet cleft. The antennal club is long in both sexes.

♂. The terminal tooth of the tibia is short and sharp.

♀. The terminal tooth of the tibia is long and blunt.

Length, 14–16·5 mm.; breadth, 7–8·5 mm.

SIKKIM: Darjiling (*Fruhstorfer*, *Harmand*, May, June), Kurseong, 6000 ft. (*E. A. D'Abreu*).

Type in the British Museum; co-types in the Berlin Entomological Museum.

This is closely similar to *A.* (*Spilota*) *plagiicollis*, Fairm.

(Yunnan), of which it exactly reproduces the form and coloration. It can be most readily distinguished by the conical pygidium. Bates has declared ('The Entomologist,' xxiv, 1891, Supplement, p. 78) that his *Paraspilota impicta* from Korea is a variety of *A. plagiicollis*, but, as numerous deceptively similar species are now found to exist, several of them being described here, it is much more probable that the Korean form is also specifically distinct.

267. **Anomala princeps.**

> *Mimela variegata*, Walker* (preoccupied), Ann. Mag. Nat. Hist. (3) iii. 1859, p. 56.
> *Pœcilosticta princeps*, Kraatz,* Deutsche Ent. Zeits. xxxvi, 1892, p. 291, pl. iv, fig. 3.

Dark bronzy-black or green-black, with the elytra sometimes entirely black, and decorated with orange markings as follows:—the clypeus (except the margin and two small basal spots), the lateral margins of the pronotum (produced inwards at each angle) and sometimes two small transverse basal spots, the middle of the scutellum, two large spots placed transversely before the middle of each elytron and sometimes coalescing, and a third a little behind them near the suture, a longitudinal stripe at the middle of the pygidium and parts of the sternum, coxæ, and abdominal segments.

The body is very smooth and shining, oval, slightly depressed, broad in the middle, and tapering before and behind. The clypeus is broadly rounded and finely rugose, and the forehead is closely punctured. The pronotum is very smooth and almost unpunctured; the sides are angulated in the middle, strongly convergent in front, the hind angles well-marked but obtuse, and the base immarginate and gently rounded in the middle. The scutellum is sharp, straight-sided and unpunctured. The elytra are irregularly punctate-striate, with a very broad irregularly punctured subsutural space. The pygidium is very prominent, flat and almost horizontal, very finely and indistinctly punctured. The mesosternal process is large, curved, bluntly pointed and strongly compressed. The metasternum bears a few fine scattered punctures and hairs, and the abdomen is almost smooth. The front tibia is strongly bidentate, the hind tibia moderately long, and the larger claw of the front and middle feet is cleft.

♂. The two teeth of the front tibia are small and sharp, and the inner front claw is dilated and cleft.

♀. The two teeth of the front tibia are very blunt and the terminal one very broad at the end. The extreme apex of the pygidium bears a transverse impression.

Length, 14–17 mm.; breadth, 8–10 mm.

Ceylon: Pundaluoya, Dimbula, Kandy (*E. E. Green*, May).

Type in the Berlin Entomological Museum; that of *M. variegata* in the British Museum.

268. Anomala chloromela.

Anomala chloromela, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 357.

Bright grass-green, with the clypeus, lateral margins of the prothorax and the entire elytra pea-green, and the lower surface and legs golden red, with the sides of the metasternum and outer edges of the tibiæ more or less green.

The body is compact, oval, convex, very smooth and shining. The clypeus is broad, nearly straight in front, and finely and rugosely punctured, the clypeal suture straight and impressed, and the forehead densely punctured. The pronotum is rather closely and strongly punctured, especially at the sides, it is strongly rounded laterally, with the front angles rather sharp and the hind angles right angles, the base being broadly rounded in the middle and not margined. The scutellum is finely and sparingly punctured. The elytra are rather scantily and shallowly punctured, the punctures becoming rather coarse at the sides and apices, and most of them forming imperfect longitudinal lines; the marginal membrane is narrow. The pygidium is finely and rather irregularly punctured. The metasternum is densely punctured and hairy at the sides, smooth and shining in the middle, and there is a short but sharp mesosternal process. The front tibia is strongly bidentate, and the longer claw of the front and middle tarsi is cleft.

♂. The inner front claw is broad, acute and strongly angulated at the middle of its lower edge.

Length, 17–18 mm.; breadth, 10–10·5 mm.

Ceylon: Ambalangoda (*E. E. Green*, March).

Type in the British Museum.

This is an interesting connecting link between those forms which have a mesosternal process and the *Euchlora* group in which there is none, but to which *A. chloromela* has in all other respects the closest resemblance.

269. Anomala gemmula.

Anomala gemmula, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 480.

Bright grass-green above, with the elytra a little lighter in colour, the head and scutellum more or less coppery, the pronotum sometimes slightly opalescent, the legs, pygidium and lower surface coppery.

It is a small ovate, shining species, rather densely clothed with white hair on the lower surface and pygidium, and with the inner edges of the eyes, the lateral margins of the pronotum and the extremities of the elytra fringed with similar hairs. The clypeus is rather small, rounded and strongly reflexed at the margins, and rugosely punctured, and the forehead is coarsely punctured. The pronotum is rather strongly and evenly punctured, the sides

angulated in the middle, scarcely curved, the hind angles obtuse, the base gently lobed and not margined. The scutellum is rather broad and scarcely punctured. The elytra have several double rows of punctures, with broad and irregularly punctured spaces between. The pygidium is strongly punctured. The mesosternum is produced into a narrow, rather compressed, but not acute process, which is not at all curved, but abruptly bent downwards in front of the middle coxæ, and sometimes nearly vertical.

♂. The inner front claw forms a broad, rather sharply pointed lamina, very minutely cleft on its outer edge. The club of the antenna is as long as the foot-stalk.

Length, 11·5–13 mm.; breadth, 6·5–7·5 mm.

MADRAS: Trichinopoli (*P. Rebière*), Kodaikanal (*J. Castets*), Shembaganur (*P. du Breuil*).

Type in the British Museum.

Among fifteen specimens in the British Museum, the Paris Museum, and the collection of Baron de Moffarts, I have seen no females.

The deflexion of the sternal process is a peculiar character which I have never found elsewhere. The process is generally nearly vertical but the angle of flexion varies and is occasionally very obtuse.

270. Anomala agnella.

Anomala agnella, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 481.

Pale yellow, with a very slight metallic lustre, the head, prothorax and scutellum coppery green or bronze.

It is a stout-bodied, ovate insect, with its greatest breadth near the posterior end, and rather thickly clad with greyish hair on the lower surface, the pygidium and extremities of the elytra; the inner edges of the eyes and the lateral margins of the pronotum are also bordered with white hairs. The clypeus is small and rugose, the forehead coarsely punctured, the pronotum strongly and rather closely punctured. The sides of the latter are feebly angulated before the middle, the hind angles very obtuse, and the base gently lobed before the scutellum and not margined. The scutellum is sparingly punctured. The elytra bear double rows of well-marked punctures, and the alternate intervals are broad and bear similar but irregular punctures. The pygidium is closely and rather finely punctured. The mesosternal process is short, straight and very sharp. The metasternum is densely punctured at the sides, and the abdomen moderately punctured all over. The antennal club is rather long in both sexes, and the front tibia is strongly bidentate.

♂. The inner anterior claw forms a broad sharply pointed lamina and is minutely cleft at the outer edge.

Length, 10–13 mm.; breadth, 6–7·5 mm.

MADRAS: Shembaganur (*P. du Breuil*); Trichinopoli (*J. Castets*).

Type in the British Museum.

A. agnella is closely related to *A. gemmula*, which it resembles in the clothing of whitish hair, but it is stouter and quite differently coloured, and the sternal process is horizontal.

271. Anomala oculicollis.

Anomala oculicollis, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 479.

Deep metallic greenish purple, with the sides of the pronotum (with the exception of an elongate central spot) and generally a narrow incomplete median line, the elytra (with the exception of the sutural, external and posterior edges, a common median transverse fascia produced a little forwards at the middle of each elytron and variable markings near the anterior and posterior margins, which are black or dark brown), and a median longitudinal line upon the pygidium, pale testaceous. The hind femora, abdomen, and sometimes the tibiæ, are variegated with yellow.

It is a small compact species, with the prothorax proportionally rather long. The clypeus is rather narrow, with the forehead densely punctate-rugose. The pronotum is shining, and very finely and sparsely punctured. The sides are gently angulated before the middle, nearly parallel behind, the hind angles are right angles and the base is scarcely lobed. The scutellum is minutely punctured, rather short and blunt. The elytra are deeply punctate-striate with the subsutural interval broad and generally completely, but sometimes incompletely, divided by a line of deep punctures. The pygidium is very smooth and shining, with fine and rather scanty punctures. The mesosternal process is short and conical, sometimes very acute, sometimes scarcely produced. The sides of the pygidium and the body beneath are thinly clothed with rather long yellowish hair. The front tibia is strongly bidentate, the hind tibia stout.

Fig. 54.—*Anomala oculicollis*.

♂. The lower lobe of the inner anterior claw is very broad and sharply angulated at the middle of the lower edge, and the upper lobe is very small. The club of the antenna is half as long again as in the female.

Length, 10–13 mm.; breadth, 6–7·5 mm.

MADRAS: Shembaganur (*P. du Breuil*), Trichinopoli (*J. Castets*), Kodaikanal (*J. Castets*).

Type in the British Museum.

This variable species has sometimes a deceptive resemblance to *A. maduræ* which follows, but may always be distinguished by its

dark head, relatively longer prothorax, and especially by the form of the mesosternal process. This varies greatly, but is always short and straight, and not slender and curved.

272. **Anomala regina.** (Plate III, figs. 37 & 38.)

Popillia regina, Newm.,* Mag. Nat. Hist. (2) ii, 1838, p. 336; id., Trans. Ent. Soc. Lond. iii, 1841, p. 35; Burm., Handb. Entom. iv, 1, 1844, p. 294.
Popillia splendida, Guérin; Delessert, Souv. de l'Inde, 1843, 2, p. 42, pl. xii, fig. 1; id., Rev. Zool. 1840, p. 39.
Hadropopillia splendida, Kraatz, Deutsche Ent. Zeits. 1892, p. 290.
Popillia lugubris, Kraatz,* Deutsche Ent. Zeits. 1897, p. 328.

Brilliant golden-green, with the head, tibiæ and tarsi deep green, the lower surface and pygidium more or less fiery, and the sides of the pronotum inconspicuously yellowish, enclosing a large dark spot. The yellow lateral patches are variable and may be absent.

The body is oval, moderately elongate, rather broad in the middle and not very convex. The clypeus is semicircular, moderately broad and densely granulated; the forehead is closely punctured and the vertex smooth. The pronotum is finely and irregularly punctured at the sides, almost smooth in the middle, strongly narrowed in front; the sides are strongly arcuate, the hind angles right angles, and the base bears a broad rounded lobe. The scutellum is rather short, blunt at the apex and scarcely visibly punctured. The elytra are deeply striated, with the intervals narrow and very convex, the striæ finely but rather shallowly punctured, and the lateral margins rather prominent. The pygidium is finely and sparsely punctured at the sides, very finely rugose in the middle. The mesosternal process is very strongly curved and a little compressed. The sides of the metasternum are closely punctured and clothed with short tawny hair. The longer claw of the front and middle feet is cleft.

♂. The front tibia has two sharp teeth, and the inner anterior claw has its lower division broadly lobed.

♀. The terminal tooth of the front tibia is long and spatulate, and the upper tooth slight.

Length, 16–18 mm.; breadth 9–10·5 mm.

Madras: Utakamand (*C. A. Barber*, April), Naduvatam, Nilgiri Hills (*H. L. Andrewes*).

Type in the Oxford Museum; that of *P. lugubris* in the Genoa Museum.

Specimens occur which are wholly of a deep non-metallic blue, the phase named *lugubris* by Kraatz.

273. **Anomala maduræ.** (Plate IV, fig. 11.)

Anomala (*Spilota*) *maduræ*, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 478.

Pale testaceous, suffused with a slight metallic lustre, with

green markings disposed as follows:—a patch on the vertex, a broad median patch on the pronotum extending from front to hind margin, the scutellum, a vague zigzag stripe at the posterior end of the elytra, and a large patch on each side of the pygidium. The dorsal segments of the abdomen are striped with black and the tarsi are dark.

It is a small, shortly ovate species, very shining above and beneath, with short pale yellow hair at the sides of the sternum. The head is densely punctate-rugose. The prothorax is extremely finely and sparsely punctured, with a few larger punctures at the sides; the lateral margins are angulated before the middle, and the base is subtruncate before the scutellum, which is very finely and irregularly punctured. The elytra are deeply striated, the striæ strongly punctured, the intervals convex, the fifth having only a few irregular punctures along the middle. The pygidium is very smooth, with minute and scanty punctures. The mesosternal process is slender, strongly curved and not compressed.

Length, 10·5–11·5 mm.; breadth, 6–7 mm.

MADRAS: Shembaganur, Madura district (*P. du Breuil*).

I have seen only three males.

This is the smallest species of this very closely connected group. It is almost identical in colouring with *A. degenerata*, but the pygidium and sides of the pronotum are much more finely punctured. The basal lobe of the thorax is very short and truncate, and may even appear to be almost emarginate when seen at a certain angle. The fifth interval of the elytra has only an incomplete row of punctures.

274. Anomala rugilatera. (Plate III, fig. 41.)

Anomala (*Spilota*) *rugilatera*, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 477.

Pale testaceous, entirely suffused with metallic green, and with dark green markings disposed as follows:—a bifid patch on the vertex of the head, a longitudinal stripe on each side of the pronotum, extending from front to hind margin, and a large oval spot on each side of the pygidium. There is a narrow zigzag transverse band just before the extremity of the elytra, the dorsal segments of the abdomen are black-striped and the tarsi are dark.

It is generally a little more elongate than *A. degenerata*. The clypeus and forehead are densely punctate-rugose. The pronotum is very finely punctured in the middle, and coarsely and closely at the sides; the lateral margins are angulated just before the middle, the front and hind angles are sharp, and the basal lobe is slight. The scutellum is very minutely and sparsely punctured. The elytra are deeply striated, the striæ closely punctured, the intervals convex, and the fifth from the suture divided by an almost continuous row of closely-set punctures. The pygidium

is rather closely and strongly punctured. The mesosternal process is extremely slender and sharp, not compressed, nor strongly curved. The metasternum is closely punctured at the sides and clothed with tawny hair. The front tibia is sharply bidentate, the hind tibia rather stout, and the longer claw of the front and middle feet cleft.

♂. The lower lobe of the inner front claw is dilated and obtusely angulated.

Length, 11–13 mm.; breadth, 6–7·5 mm.

MADRAS: Nilgiri Hills (*Sir G. F. Hampson*).

This differs from all the allied species in having the scutellum pale and a broad median yellow stripe upon the pronotum completely dividing the dark colour into two longitudinal patches. The sides of the pronotum and the pygidium are also more coarsely punctured than in the other species. The mesosternal process is exceedingly acute and slender.

275. **Anomala degenerata.** (Plate IV, figs. 12 & 13.)

Anomala (Spilota) degenerata, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 476.

Pale testaceous, entirely suffused with a metallic green lustre and decorated with dark green markings disposed as follows:— a patch on the vertex of the head, a broad median patch on the pronotum, extending from front to hind margin, and sometimes an incomplete narrow pale median line, the sides or the whole of the scutellum, a vague zigzag stripe near the extremity of the elytra, and sometimes still vaguer anterior patches near the suture, and a large oval spot on each side of the pygidium. The dorsal segments of the abdomen are striped with black, and the tarsi are dark.

The form is rather broadly ovate. The clypeus and forehead are densely punctate-rugose. The pronotum is very shining and finely punctured, more strongly and a little more closely at the sides, the lateral margins are feebly angulated before the middle, the front and hind angles are sharp, and the base is gently lobed in the middle. The scutellum is very minutely punctured. The elytra are deeply striated, the striæ closely punctured, the intervals convex, the fifth divided by an almost continuous row of closely-set punctures. The pygidium is moderately punctured. The mesosternal process is slender and acute, not compressed, nor strongly curved. The sides of the metasternum are closely punctured and thinly clothed with yellow hair. The front tibia is sharply bidentate, the hind tibia moderately long, and the longer claw of the front and middle feet cleft.

♂. The lower lobe of the front inner claw is dilated and sharply angulated.

Length, 18 mm.; breadth, 7·5 mm.

MADRAS: Shembaganur, Madura district (*P. du Breuil*).

Type in the British Museum.

This and the following species have the pygidium strongly punctured. It is smaller than the two succeeding species, but a little larger than *A. rugilatera*, the pygidium and the sides of the pronotum are rather less strongly punctured than in the latter, and the dark patch on the thorax is not completely divided and frequently not at all.

276. Anomala strigata.

Euchlora strigata, Castelnau,* Ann. Nat. Hist. iv, 1840, p. 351; id., Hist. Nat. Ins. ii, 1840, p. 137; Burm., Handb. Ent. iv, 1, 1844, p. 274.
Anomala (*Spilota*) *innocens*, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 475.

Pale yellow, with a metallic green or purple suffusion and decorated with dark green markings, consisting of a broad patch on the vertex, a large patch on each side of the pronotum (the two partly coalescing in the middle and almost or quite reaching the front and hind margins), an oblique elytral spot near the scutellum on each side, a vague postmedian patch and a zigzag transverse stripe near the extremity. There is a large brown patch on each side of the pygidium surrounded by a green ring.

This species has the closest resemblance to *A. armata*, from which it differs chiefly by the absence of the femoral process in the male, the lower edge of the hind femur being only very gently sinuated. The upper tooth of the front tibia in the same sex is feeble and the lower lobe of the inner front claw is angulated at the middle and not beyond it. There is a marked difference in the shape of the ædeagus in the two species.

Length, 15 mm.; breadth, 9 mm.

MADRAS: Anamalai Hills (*H. L. Andrewes*), Coromandel (type).

Both sexes were found by Mr. H. L. Andrewes and a single male was taken by Mr. W. Davison in the same locality many years ago.

I believe this to be Castelnau's species from a specimen sent to me by M. René Oberthür, derived from the collection of Dupont, by whom the name *strigata* was first proposed, and which may therefore be the actual type specimen. The type of *A. innocens* is in the British Museum.

277. Anomala armata.

Anomala (*Spilota*) *armata*, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 474.

Pale yellow, entirely suffused with a metallic green lustre and decorated with dark green markings, consisting of a broad patch on the vertex of the head, a large patch on each side of the pronotum (almost or quite extending to the front and hind margins and sometimes coalescing in the middle), the scutellum, an oblique basal elytral spot near it on each side, an indefinite postmedian interrupted stripe and a zigzag anteapical one. There is a large

oval patch on each side of the pygidium, sometimes green and sometimes brown with a green encircling ring.

The shape is oval, slightly elongate and rather broad towards the extremity. The clypeus and forehead are densely punctate-rugose. The prothorax and scutellum are very shining and extremely finely and sparingly punctured, with larger punctures at the sides of the former; the lateral margins are gently angulated before the middle, the hind angles nearly right angles, and the base is gently lobed before the scutellum. The elytra are deeply striated, the striæ closely punctured, the intervals convex, and the fifth divided longitudinally by a continuous row of closely-set punctures. The pygidium is very shining and finely and sparsely punctured. The mesosternal process is long, strongly curved and a little compressed. The sides of the metasternum are closely punctured and thinly hairy. The front tibia is strongly bidentate, the hind tibia moderately stout, and the longer claw of the front and middle feet cleft.

♂. The apical tooth of the front tibia is short, the upper one well-marked. The lower lobe of the inner front claw is broad and angulated beyond the middle. The hind femur bears a strong blunt lobe a little before the middle of the lower edge.

♀. The apical tooth of the front tibia is long and blunt. The hind femur bears a distinct angulation before the middle of its lower edge.

Length, 16–17 mm.; breadth, 8·5–9·5 mm.

MADRAS: Nilgiri Hills (*Sir G. F. Hampson*).

Type in the British Museum.

I know of no other species of *Anomala* in which the hind femur of the male is armed in this way.

278. **Anomala vittilatera**, sp. nov. (Plate III, figs. 39 & 40.)

Deep metallic green, except the clypeus, the sides of the pronotum (which are longitudinally divided by a narrow dark line not reaching the edges), the anterior margins of the elytra and two irregular interrupted transverse bars, the median line of the pygidium, the lower surface of the body, the femora and front and middle tibiæ, which are pale yellow, suffused with a faint metallic green or golden lustre. The tarsi and sometimes the middle of each dark lateral patch of the pygidium are coppery red.

It is of compact oval shape and very smooth and shining. The head is rugosely punctured, with the clypeus nearly straight in front and rounded at the sides. The pronotum is scarcely visibly punctured, except at the sides, which are angulated in the middle, nearly straight from there to the angles, which are sharp, the front ones acute, the hind ones nearly right angles, the base being broadly lobed and not margined. The scutellum is scarcely punctured, and the elytra each bear six deep dorsal sulci containing minute punctures; the intervals are convex, the fifth longitudinally divided by an incomplete row of punctures. The

pygidium bears fine, rather scattered punctures. The mesosternal process is slender, sharp and strongly curved; the middle of the metasternum is very smooth and the sides are closely punctured and clothed with short pale pubescence. The hind femora are rather short and thick, the front tibiæ bidentate, the hind tibiæ not inflated, constricted or dilated, and the longer claw is cleft upon the front and middle tarsi.

♂. The front tibia is slender, the terminal tooth short and sharp, the inner front claw dilated and angulated.

♀. The terminal tooth of the front tibia is long, curved and blunt.

Length, 13–16 mm.; breadth, 7·5–8·5 mm.

MADRAS: N. Coorg, Sonawarpet (*L. Newcome*, July).

Type in the British Museum.

Only a single pair has been found.

In the male the elytra are rather pale green and only the sulci dark. This is probably due to slight immaturity.

279. Anomala varia.

> *Popillia varia*,* Newm., Mag. Nat. Hist. (2) iii, 1839, p. 365; Burm., Handb. Ent. iv, 1, 1844, p. 545.
> *Anomala popiliopsis*, Cand.,* Col. Hefte, v, 1869, p. 43.

Deep metallic green, with the elytra purple-bronze and with pale testaceous markings, consisting of the lateral margins of the prothorax, two zigzag transverse bands crossing the elytra (the first before the middle, touching the base and the scutellum and enclosing a dark basal spot, the second behind the middle), a median longitudinal line upon the pygidium, and stripes at the sides of the sternum and abdomen and upon the femora.

The body is shortly ovate, very shining above and thinly clothed with tawny hair upon the sternum. The clypeus is broadly rounded and rugose, the head coarsely and closely punctured. The pronotum is slightly opalescent in the middle, where it is almost impunctate, and finely and sparingly punctured at the front and sides; the lateral margins are angulated in the middle and scarcely curved, the front angles very, and the hind angles slightly, acute, the basal lobe being truncate. The scutellum is short, acute and feebly punctured. The elytra are deeply sulcate, with fine and rather irregular punctures in the sulci. The pygidium is strongly punctured, the metasternum smooth in the middle and rugose at the sides, and the abdomen sparingly punctured. The mesosternal process is strongly curved and a little compressed.

The teeth of the front tibia are sharp in the male and very blunt in the female.

Length, 12–14 mm.; breadth, 7–8·5 mm.

ASSAM: Khasi Hills.

Type in the Oxford Museum; that of *A. popiliopsis* in the Brussels Museum.

280. **Anomala rachelæ**, sp. nov.

Bright reddish testaceous above, yellow beneath, suffused with a rather faint metallic lustre, not perceptible upon the elytra, and decorated above and beneath with black markings, consisting of a spot on each side of the middle of the pronotum and a straight oblique lateral line very near the outer margin on each side, a faint narrow lateral border to the scutellum, a shoulder-spot and two very irregular transverse bands upon the elytra (the first near the middle and the second very near the hind margins), the entire pygidium (except a narrow yellow longitudinal median line), and parts of the lower surface and legs, the ventral segments having transverse yellow bars at the sides and the hind femora a large black spot in the middle.

It is oval in shape, smooth and shining, and only thinly clothed beneath with short pale hair. The head is rugosely punctured, except upon the vertex, where the punctures are close and strong. The clypeus is transversely rounded and its margin not very strongly reflexed. The pronotum is rather long, strongly punctured, the punctures very coarse and close at the sides and becoming gradually finer and more scattered towards the middle; the sides approach one another from base to front, they are feebly angulated in the middle, the front angles are slightly acute, the hind angles obtuse, and the base is not margined. The scutellum is rather short but acute and bears scattered punctures. The elytra bear six very deep dorsal striæ, which are very finely punctured, the intervals are strongly convex, and the lateral striæ are very coarsely punctured. The pygidium is strongly punctured. The mesosternum bears a very acute, rather compressed and strongly curved process. The legs are rather short, the front tibia armed with two strong but not sharp teeth, the hind tibia stout and a little contracted at the end, and the longer claw cleft on the front and middle feet.

Fig. 55.—*Anomala rachelæ.*

♂. The body is shorter, the front tarsi are a little contracted, and the inner front claw is strongly and angularly dilated.

Length, 13–14 mm.; breadth, 7·5 mm.

Burma: Karen Hills, 2700–3300 ft. (*L. Fea*, Dec.), Bhamo (*F. M. Mackwood*, April).

Type (♂) in the British Museum; co-type (♀) in the Genoa Museum.

This is very nearly related to the Malayan *A. wallandi*, Cand., but much more strongly punctured and striated. It is named in commemoration of the assistance given me by my wife in the preparation of this volume.

281. **Anomala nigroscripta**, sp. nov.

Chestnut-red, with a very feeble metallic lustre upon the anterior part, and decorated with black markings consisting of a spot on each side of the vertex, an oblique mark on each side of the middle of the pronotum (the two connected at the base by a narrow marginal line), a small spot in the front angle and another immediately behind it, the scutellum, a patch closely adjoining it upon each elytron, an irregular patch at the shoulder and two zigzag transverse bands extending from side to side, the first at the middle and the second at the hind margin. The pygidium is black, with the exception of a pale median line, and the legs and lower surface have some slight dark markings.

It is oval, convex, very smooth and shining; the metasternum clothed with short, but fairly close, yellow hair. The head is closely and rather rugosely punctured, with the clypeus evenly rounded in front and almost parallel-sided. The pronotum is thinly and extremely minutely punctured, except at the sides, where the punctures are a little stronger; the lateral margins are rounded in the middle, straight in front and behind, with all the angles nearly right angles, but slightly obtuse, the base being rather strongly lobed in the middle and not margined. The elytra bear six finely punctured and not deeply impressed dorsal striæ, and the fifth interval bears a row of punctures along its anterior half. The pygidium is shining, but transversely striolated at the sides and finely punctured along the middle line. The mesosternal process is slender and strongly curved. The legs are not long, the front tibia is bidentate, the hind tibia fairly stout, but not dilated at the end, and the longer claw of the front and middle feet is cleft.

I have seen only a single female.

Length, 13·5 mm.; breadth, 8 mm.

MADRAS: Anamalai Hills (*H. L. Andrewes*).

The unique type has been presented by Mr. H. E. Andrewes to the British Museum.

282. **Anomala ebena.**

Popillia ebena, Burm.,* Handb. iv, 2, 1855, p. 511.

Coal-black, very smooth and shining above and beneath, and almost devoid of hair.

The body is rather elongate, depressed above, with the prothorax much narrowed anteriorly, and the head small. The clypeus is broadly rounded and coarsely granular, and the forehead coarsely and confluently punctured. The pronotum is convex, finely and closely punctured at the sides, and almost smooth in the middle; the lateral margins are gently curved and strongly convergent to the front, the front angles acute, the hind angles obtuse, and the base strongly lobed and without a marginal stria. The scutellum is smooth, and the elytra have each a strong oblique impression a little behind the scutellum; they are very

smooth, each with a sutural and two dorsal costæ slightly indicated and minute scanty punctures in the intervals. The pygidium is short and broad, with a broad impression at the apex; it is finely punctured in the middle, and rather closely and rugosely at the sides. The metasternum is strongly and closely punctured at the sides, with very short, scanty and inconspicuous hairs, and smooth and very tumid in the middle, where, together with the mesosternum, it forms a very broadly compressed laminar process, semicircularly rounded in front. The front and middle legs are moderately slender and the hind ones rather stout; the front tibiæ are armed with two not very sharp teeth, and the longer claw of the front and middle tarsi is cleft.

Length, 17 mm.; breadth, 9 mm.

MADRAS: Malabar (type); BURMA: Amherst, Tenasserim (*Col. C. T. Bingham*).

Type in the Geneva Museum.

I do not know the female, the description being drawn from the (♂) type in the Geneva Museum. I am very sceptical of the supposed locality of this specimen. An allied species occurs in the Malay Peninsula.

283. **Anomala isolata**, sp. nov.

Deep golden green, with the pygidium, lower surface and legs (except the hind tibiæ and the tarsi) generally paler.

It is broadly oval, compact, convex and very shining, with moderately slender legs. The clypeus is short, broad, rounded at the sides and rugosely punctured, and the forehead is strongly but separately punctured. The pronotum is short, rather strongly and evenly punctured, with the sides obtusely angulated in the middle, the front angles acute, the hind angles obtuse, and the base not margined in the middle. The scutellum is strongly punctured, and the elytra bear rather irregular rows of strongly impressed punctures, with a very broad, closely and irregularly punctured, subsutural interval; the humeral and apical calli are prominent and the three striæ between the latter and the suture are very deeply impressed posteriorly. The pygidium is strongly punctured. The mesosternum is produced, but short, blunt and compressed, and the sides of the metasternum are closely punctured and clothed with extremely fine and inconspicuous pale pubescence. The tibiæ are slender, the front pair armed with two strong teeth, the hind ones not inflated, nor dilated at the end. The longer claw is cleft in the front and middle feet.

♂. The terminal tooth of the front tibia is short and sharp, and the pygidium is more shining than in the female.

♀. The terminal tooth of the front tibia forms a rounded lobe.

Length, 16–17 mm.; breadth, 9–10 mm.

ANDAMAN Is. (*Capt. Wimberley*, *Roepstorff*), Port Blair (*E. H. Man*).

Type in the British Museum; co-types in the Indian and Genoa Museums.

284. **Anomala pyroscelis.**

Mimela pyroscelis, Hope,* Trans. Ent. Soc. Lond. iii, 1841, p. 66.
Anomala fulgens, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 195 (new syn.).
Anomala rufipes, Burm.,* Handb. Ent. iv, 2, 1855, p. 506 (new syn.).

Deep metallic green above, usually coppery green beneath, with the antennæ and legs red, the latter generally with a golden lustre.

It is oval, compact, moderately convex, shining above, with a rather scanty clothing of decumbent yellowish hairs at the sides beneath and rather long erect hairs upon the pygidium. The clypeus is finely rugose, very small, short, nearly straight in front and rounded at the sides; the forehead is rugosely and the vertex finely punctured. The pronotum is minutely punctured, the sides obtusely angulated before the middle, scarcely rounded, the front angles acute and the hind nearly right angles but not sharp; the base is trisinuate and the marginal stria interrupted in the middle. The scutellum is finely punctured, and the elytra rather finely punctured in double lines, which outline two feebly elevated dorsal costæ; the alternate intervals, especially the subsutural one, are very wide and irregularly punctured. The pygidium is rugose. The metasternum forms a sharp edge in front between the middle coxæ, but is not produced in front of them. The legs are moderately long, the front tibiæ bidentate, the hind tibiæ not inflated nor dilated at the end, and the longer claw of the front and middle feet is cleft.

♂. The antennal club is long, and the teeth of the front tibia are rather sharp.

Length, 14–17 mm.; breadth, 8·5–9·5 mm.

BHUTAN; ASSAM.

Type in the Oxford Museum; that of *A. fulgens* in the Paris Museum, and of *A. rufipes* in the Halle Museum.

285. **Anomala festiva**, sp. nov.

Bright metallic green, golden green or golden red, with the elytra testaceous yellow, suffused with a metallic green or golden lustre and with a dark green sutural line. The lower surface, pygidium and legs are dark bronze or copper-coloured.

It is a small insect, oval in shape, not very convex, with moderately long legs, and clothed with long, but not very dense, erect yellowish hair, which is absent from the clypeus, scutellum and elytra. The head is densely punctate-rugose and opaque, with the eyes widely separated, and the clypeus broad and rectangular, its front margin straight and strongly reflexed. The pronotum is very shining, very irregularly and unequally punctured, some of the punctures being very coarse and others very fine; its sides are nearly straight and parallel behind, contracted and feebly

rounded in front, with the front angles acute, the hind angles nearly right angles, and the base not margined. The scutellum is short and almost entirely smooth. The elytra are punctate-striate, the lines strongly impressed near the suture, the external ones more lightly, and most of them becoming rather feeble posteriorly. The pygidium is rather rugosely punctured. The mesosternum forms a very slight prominence between the middle coxæ. The front tibia is bidentate, and the hind tibia rather slender, without constriction or dilatation.

♂. The front tarsus is rather thickened, the claws have each an angular dilatation at the base and the larger one is broad, but not cleft. The longer claw of the middle tarsus is cleft.

I have not seen a female, but it is probable that in it the longer claws of both front and middle feet are cleft.

Length, 8·5–9·5 mm.; breadth, 5 mm.

SIKKIM: Tungu, Teesta Valley, 13,000–14,000 ft. (July); TIBET: Khamba Jong, 15,000–16,000 ft. (July), Yatong, 10,500 ft. (*A. E. Hobson*).

Type in the British Museum.

A series of eighteen specimens collected during the Tibet Military Expedition of 1903 are all males.

This is a peculiar species without any known near ally in India. It is related to the familiar *A. horticola*, L., and other European species usually known by the generic name of *Phyllopertha*, but is without a basal margin to the pronotum, which Reitter regards as an essential feature of the *Phyllopertha* group. The uncleft inner front claw is a very peculiar characteristic, but is probably distinctive of the male alone.

286. Anomala erythroptera.

Ischnopopillia erythroptera, Kraatz,* Deutsche Ent. Zeits. 1892, p. 295.

Steely-blue or blue-green, with the elytra bright brick-red.

It is a small species, short and broad in form, very smooth and shining. The clypeus is broad and rugose, with the front margin strongly reflexed and nearly straight. The forehead is strongly and closely punctured, and the vertex smooth and shining. The pronotum is short, very smooth and shining, with a large pit on each side, but otherwise almost unpunctured; the sides are strongly convergent in front and nearly parallel behind, the front angles acute and the hind ones nearly right angles. The scutellum is short and almost unpunctured. The elytra bear five dorsal rows of deep punctures, and the second and fourth intervals are wide and bear incomplete rows of similar punctures along the middle. The pygidium is very shining, but moderately closely set with deep punctures. The mesosternum forms a rectangular lamina, vertical in front. The metasternum is very smooth in the middle and closely punctured at the sides, and the sides of the

sternum and abdomen are thinly clothed with pale hairs. The front tibia is bidentate, and the longer claw of the front and middle feet cleft at the end.

♂. The club of the antenna is long, the teeth of the front tibia are short, the front tarsus thick, the last joint very much enlarged and the inner claw broadly dilated.

♀. The outer edge of each elytron is thickened behind the shoulder.

Length, 8–9·5 mm.; breadth, 5–6 mm.

Assam: Khasi Hills, Shillong; Sikkim: Mungphu, below 5000 ft. (*E. T. Atkinson*), Sureil, 5000 ft., Kurseong, 6000 ft. (*E. A. D'Abreu*, May).

Type in the Berlin Entomological Museum.

287. Anomala pusilla.

Anomala pusilla, Arrow, Ann. Mag. Nat. Hist. (8) ix, 1912, p. 82.

Pale yellow, with a golden or golden-green suffusion, the head and a longitudinal patch on each side of the pronotum (angulated externally and not attaining the front or hind margin) dark green.

It is ovate, much narrowed in front and behind, and not very convex. The head is very deeply and rugosely punctured, the clypeus small and rounded, and the frontal suture almost obliterated. The pronotum is coarsely but sparsely punctured at the sides and almost smooth in the middle; the sides are strongly angulated in the middle and nearly straight from there to the front and hind angles, which are sharp, the base being broadly rounded in the middle and not margined. The scutellum is smooth and sharply pointed. The elytra are coarsely and deeply striate-punctate. The pygidium is coarsely rugose and bears a few long hairs near the apex. The metasternum is rugose and thinly pubescent, and the abdomen is coarsely punctured. The mesosternum forms a broad compressed slightly prominent lamina. The front tibiæ are strongly bidentate, and the larger claw of the front and middle feet is cleft.

Fig 56.—*Anomala pusilla*, ♂.

♂. Smaller, its elytra less broad, the prothorax less contracted anteriorly; the tibiæ and the tarsi are dark green, the apical tooth of the front tibia is acute, the upper tooth slight, and the inner front claw broad.

♀. The shape is more oval, the elytra have the outer margins dilated and thickened from the shoulder to the middle, the tibiæ and tarsi are copper-coloured, and the apical tooth of the front tibia is rather blunt.

Length, 7–9 mm.; breadth, 3·5–5 mm.

NEPAL: Soondrijal; SIKKIM: Mungphu (*E. T. Atkinson*), Kurseong (*Verschraeghen*), Shamdang; ASSAM: Manipur (*W. Doherty*), Shillong.

Type in the British Museum; co-types in Baron de Moffarts' collection.

This is one of the small species having evident relationship to *Popillia*, but differing in the absence of an emargination to the pronotum in front of the scutellum.

288. **Anomala parva**, sp. nov.

Deep golden-green or coppery-red, with the elytra orange, suffused with a metallic greenish or reddish lustre, and sometimes with the pygidium also orange, with a deep green patch on each side.

It is rather short, broad behind, a little depressed, very shining, and thinly clothed beneath and at the end of the pygidium with fine yellowish hairs. The head is closely and rugosely punctured, with the clypeus rather narrow and gently rounded in front. The pronotum is very minutely and sparsely punctured, except near the sides, where the punctures are large and deep; the sides are angulated in the middle, scarcely rounded, the front angles acutely produced and the hind angles almost right angles; the base is not margined. The scutellum is smooth, and the elytra bear six deep and closely placed dorsal grooves containing large punctures; the marginal membrane is rather broad behind. The pygidium is coarsely transversely rugose, but slightly shining. The mesosternum forms a compressed lamina extending well beyond the middle coxæ, but very blunt and not at all produced forward. The legs are rather long, the front tibia armed with two strong teeth, the hind tibia not at all inflated, nor dilated at the end, and the longer claw of the front and middle feet cleft at the tip.

♂. The front tibia is shorter and broader, and the two teeth are shorter and sharper, than in the female.

♀. The elytra are longer and have a strong lateral thickening behind the shoulders.

Length, 6·5–8 mm.; breadth, 3·5–4·5 mm.

ASSAM: Shillong, Cherrapanji (*S. W. Kemp*, Oct.).

Type in the British Museum; co-types in the Indian Museum.

289. **Anomala dohertyi**, sp. nov.

Deep golden- or coppery-green, with the tibiæ and tarsi coppery-red, the elytra, a median longitudinal line and the lateral margins of the pronotum, and the femora light golden-green.

It is very shining, with the sides of the body beneath and the end of the pygidium thinly clothed with yellowish hairs; oval in shape, a little depressed, with the head and prothorax narrow. The head is coarsely and rugosely punctured, with the clypeus broadly rounded. The pronotum is rather long and narrow, very

smooth, with a few strong punctures at the sides and in the front angles; the sides are scarcely rounded, obtusely angulated near the middle and nearly straight to the angles, which are all sharp, the front ones acutely produced; the base is not margined. The scutellum is smooth, and the elytra bear six close and strong dorsal grooves, containing coarse indefinite punctures, the marginal membrane being rather broad at the extremity. The pygidium is densely transversely rugose and opaque. The mesosternal process is strong, very slightly produced and very blunt, and the sides of the metasternum are coarsely rugose. The front tibiæ are bidentate, the hind tibiæ not inflated nor distinctly dilated at the end, and the longer claw of the front and middle feet is cleft.

♂. The antennæ are rather long, the front legs rather stout, with the tibial teeth short and the inner claw dilated.

♀. The elytra are gradually dilated and strongly thickened before the middle, and the terminal tooth of the front tibia is long and curved.

Length, 8·5–10 mm.; breadth, 5–6 mm.

ASSAM: Manipur (*W. Doherty*).

Type in the British Museum.

290. Anomala moorei.

♂. *Ischnopopillia moorei*, Kraatz, Deutsche Ent. Zeits. 1892, p. 294; Ohaus, Stett. Ent. Zeit. lviii, 1897, p. 379.
♀. *Ischnopopillia andrewesi*, Kraatz, op. cit. 1897, p. 332 (n. syn.).

Deep metallic green, with the clypeus, the sides of the prothorax and generally a very narrow basal line, the elytra and legs reddish testaceous.

The clypeus is finely, the forehead more coarsely, rugose, with a few coarse hairs between the eyes. The prothorax is nearly twice as broad as it is long, very shining, with two deep pits on each side; the lateral margins are strongly angulated a little before the middle, and nearly straight from there to the front and hind angles. The scutellum bears only a few minute punctures, and the elytra are deeply and closely sulcate from base to apex, the sulci being finely rugulose, and the fifth and seventh intervals bearing irregular punctures on the anterior part. The pygidium is densely clothed with decumbent grey hair, and the lower surface is punctured and hairy at the sides and nearly smooth in the middle.

♂. The pronotum is minutely and rather sparingly punctured, and the pygidium is very convex.

♀. The pronotum is strongly punctured in its anterior part, rugosely in the middle.

Length, 11 mm.; breadth, 7 mm.

PUNJAB: Chamba.

Type (♂) in M. René Oberthür's collection; that of *I. andrewesi* (♀) in the British Museum.

291. **Anomala flavipes**, sp. n.

Testaceous, with a greenish-golden lustre, and with the forehead and vertex, the pronotum, except broad lateral margins (narrowed behind) and usually narrow front and hind margins and an incomplete median longitudinal line, the scutellum (sometimes pale posteriorly), the pygidium and lower surface (except the legs) deep metallic green. The tarsi are light brown and the tibiæ may be of a rather deeper orange colour than the femora but are not green or coppery beneath.

Oval in shape and rather tapering in front. The head is rugosely punctured and opaque, except behind the eyes, where it is shining. The eyes are small and far apart. The clypeus is broadly transverse, finely rugose, with the front margin nearly straight, and strongly reflexed, and the forehead is coarsely rugose and thinly clothed with erect yellow hairs. The pronotum is narrower than the elytra at the shoulders, strongly or slightly shining and extremely variable in sculpture, with the sides angulated a little before the middle and nearly straight from there to the front and hind angles, the front angles slightly acute, the hind angles strongly marked but slightly obtuse, and the base not margined. There is a deep puncture on each side near the middle and a broader and shallower one just behind it. The elytra are closely and deeply sulcate, with the second sulcus disrupted at the base and the fifth more or less broken up into coarse punctures. The marginal membrane is rather broad behind. The pygidium is clothed with close grey pubescence. The mesosternal process is not produced, but forms a broad lamina between the middle coxæ. The front tibia is armed with two sharp teeth and the hind tibia is moderately elongate. The lower surface is very dark and clothed with grey hair.

♂. The pronotum is sparingly punctured and very shining. The elytra are opaque, except near the base and the inner margin, and the abdomen is produced, arched beneath, with the pygidium narrow and densely clothed. The tibiæ and tarsi are much thickened, the teeth of the front tibiæ minute, the hind tibiæ a little narrowed at the extremity, the front tarsus contracted, the longer claw blunt and not cleft. The longer middle claw is minutely cleft.

♀. The pronotum is generally closely and roughly punctured. The elytra are rather shining and each has a conspicuous thickening before the middle of the outer margin. The abdomen is rounded and the pygidium broad and closely, but not densely, pubescent. The legs are slender, the front tibia bearing a long curved terminal tooth, the hind tibia a little dilated at the extremity and the longer front and middle claws cleft.

Length, 9–10 mm.; breadth, 5·5–6 mm.

UNITED PROVINCES: Ranikhet (*H. G. Champion*, June–Aug.).

Found upon Alder (*Alnus nepalensis*).

Type in the British Museum; co-types in Mr. G. C. Champion's collection.

This is generally easy to distinguish from *A. lateralis* by its shining pronotum, but the sculpture of this part varies according to sex and is very inconstant. I have seen a male of *A. lateralis* in which the puncturation is not denser than in a female of *A. flavipes*, and in one female specimen of the latter it is quite scanty, as in the male.

A. flavipes is rather smaller than *A. moorei*, its prothorax has a pale median stripe not found in the latter and, in the corresponding sex, is less smooth and shining.

292. Anomala lateralis.

Anomala lateralis, Hope,* Gray's Zool. Miscellany, 1831, p. 24.
Popillia rugicollis, Newm.,* Mag. Nat. Hist. (2) ii, 1838, p. 337; id., Trans. Ent. Soc. Lond. iii, 1841, p. 47.
Ischnopopillia rugicollis, Kraatz, Deutsche Ent. Zeits. xxxvi, 1892, p. 294.

Deep metallic green, with the clypeus, the lateral margins of the prothorax and generally a very narrow basal margin and an imperfect narrow median line, the elytra and the legs brownish or testaceous, suffused with a metallic green lustre.

It is rather small, not very convex, broad at the shoulders and strongly narrowed before and behind, with the pygidium prominent and densely clothed with short decumbent white hair. The head is finely granular, with some coarse punctures between the eyes, bearing rather long yellow hairs; the eyes are small, the clypeus rather broad, with its suture nearly straight. The pronotum is about half as wide again as it is long, much narrower at its base than the elytra at the shoulders, and strongly tapering forwards; it is coarsely rugose above, except at the sides, which are coarsely punctured, and has a large ill-defined pit on each side; the lateral margins are strongly angulated in the middle, and nearly straight from there to the front and hind angles, which are sharp, the base being well rounded, not margined or excised. The scutellum is rather short, blunt at the apex, and bears only a few punctures. The elytra are closely and deeply sulcate from base to apex, the sulci being finely rugulose and the fifth and seventh intervals dilated and coarsely punctured near the base. The pygidium is rugose and densely hairy, and the lower surface is punctured and hairy at the sides, and smooth and shining in the middle. The mesosternum forms a short right-angled lamina between the middle coxæ. The legs are stout and rather long; the front tibia sharply bidentate; the claws long, the larger one of the front and middle feet very feebly cleft at the extreme tip.

♂. The clypeus is enlarged and rectangular, the three or four innermost costæ of each elytron are smooth and shining, and the remainder finely rugulose and opaque, the abdomen arched beneath and the pygidium narrow. The front tibia is very broad, with its teeth minute and close together, the first four joints of the front tarsus are very short and thick, the last joint very long and strongly bent and the inner claw dilated.

♀. The clypeus is short and rounded in front. The elytra have a very strong and prominent thickening just before the middle of the outer margin, and all the dorsal costæ are smooth and shining. The terminal tooth of the front tibia is rather long.

Length, 9–10 mm.; breadth, 6–7 mm.

SIKKIM: Darjiling, Kurseong (*Verschraeghen*); NEPAL (*Maj.-Gen. Hardwicke*—type).

Type in the British Museum; that of *P. rugicollis* in the Oxford Museum.

The specimen referred to by Dr. Ohaus (Stett. Ent. Zeit. lviii, 1897, p. 350) as the type of *Popillia rugicollis*, Newm., "in London" is apparently *Dactylopopillia virescens*, Hope: Newman's type is not in London.

The sculpture of the pronotum is curiously variable. It is generally quite opaque, but occasionally somewhat shining.

Although the characters of the three foregoing species in combination produce a very well marked and peculiar type, there is no single feature of the female which is not to be found in one of the groups of *Anomala*, and I have therefore not been able to retain this and the allied species as generically separate. The prothorax much narrower than the base of the elytra, the prominent hairy pygidium, the form of the mesosternal process and of the front tibia in the male connect them rather closely with *Popillia*.

Genus RHINYPTIA.

Rhinyptia, Burm., Handb. Entom. iv, 1, 1844, p. 227; Lacord., Gen. Col. iii, 1856, p. 324.

TYPE, *Rhinyptia indica*, Burm.

Range. India, Western Asia and Africa.

Ovate in form, very smooth, shining and without hairy clothing above. Eyes large and prominent, and the clypeus small, narrowing anteriorly, where it forms a recurved rostrum. Antenna 9-jointed, the first joint clubbed, the 2nd globular, the 3rd to the 5th elongate, the 6th very short. Labrum thin and horizontal, bluntly angular in front. Mandible rather rectangular, with the apex rounded, and bearing a very sharp spine-like internal tooth beneath it and a strong coarsely-ridged molar part at the base. Maxilla armed with six very sharp slender teeth parallel to one another. Mentum broad and emarginate at the front edge. Base of the pronotum completely margined, scarcely lobed before the scutellum. Prosternum and mesosternum without process. Elytra membranous at the outer margins. Last abdominal spiracle placed midway between the front and hind margins of the penultimate dorsal segment. Fifth ventral segment twice as long as the preceding ones. Front tibia armed with three external teeth; hind tibia moderately long; all the tarsi long, with the claws very unequal, and the longer claw of the front foot cleft at the tip.

♂. The end of the abdomen protrudes more than in the female, so that the body is arched beneath. The terminal tooth of the front tibia is rather sharp and the longer front claw very unequally divided.

♀. The abdomen is convex beneath, the terminal tooth of the front tibia is blunt and club-shaped, and the longer front claw is almost equally cleft.

Key to the Species.

1 (8)	Clypeus with a very sharp median longitudinal keel.	
2 (3)	Rostrum distinctly longer than broad.	*indica*, Burm., p. 269.
3 (2)	Rostrum shorter than broad.	
4 (7)	Clypeus distinctly punctured.	
5 (6)	Suture not dark	*nigrifrons*, Kr., p. 270.
6 (5)	Suture dark	*suturalis*, Kr., p. 270.
7 (4)	Clypeus shining, scarcely punctured..	*meridionalis*, Arr., p. 271.
8 (1)	Clypeus not sharply keeled longitudinally	*læviceps*, sp. n., p. 272.

293. Rhinyptia indica.

Rhinyptia indica, Burm.,* Handb. Ent. iv, 1, 1844, p. 228.
Rhinyptia testacea, Nonfr. Berl. Ent. Zeits. xxxvi, 1892, p. 230 (n. syn.).

Pale yellow, with the tarsi and clypeus dark red, and the forehead and vertex nearly black.

The body is rather elongate, parallel-sided and moderately convex. It is smooth, shining and only very thinly clothed with pale hair beneath. The clypeus and forehead are finely and densely rugose, and the vertex rather closely punctured. The clypeus is small, with its sides strongly bisinuated and converging to a narrow strongly recurved rostrum, longer than it is wide, rounded at the end, and strongly and sharply carinate along the middle. The pronotum is finely and closely punctured, broad at the base and gently rounded at the sides, with the front angles sharp and nearly right angles, and the hind angles blunt and rounded. The scutellum bears some fine punctures, and the elytra are strongly punctate-striate, with a broad, irregularly punctured second (subsutural) interval and a less broad fourth interval, irregularly punctured on the posterior half; the punctures becoming reduced to a single line upon its anterior half. The pygidium is strongly and moderately closely punctured. The metasternum is densely punctured at the sides, and the abdomen rather laxly. The front tibia is tridentate, the uppermost tooth rather feeble, the inner claw of the front foot is cleft, and the rest are simple.

Fig. 57.—*Rhinyptia indica.*

♂. The terminal tooth of the front tibia is rather long.

♀. The terminal tooth of the front tibia is blunt.

Length, 13–16 mm.; breadth, 7–8 mm.

BOMBAY: Belgaum (*H. E. Andrewes*), Bassein Fort (Oct.); CENTRAL PROVINCES: Nagpur, 1000 ft. (*E. A. D'Abreu*, Sept.); MADRAS.

Type in the Halle Museum.

294. Rhinyptia nigrifrons.

Rhinyptia nigrifrons, Kraatz, Deutsche Ent. Zeits. 1895, p. 105.

Orange-yellow, with the tarsi reddish, and the vertex of the head and the forehead at the sides black.

It is rather convex, moderately elongate and very shining, with a scanty clothing of hair upon the clypeus and the sternum. The head is densely rugose, with the clypeus narrow and its sides converging rapidly to form a reflexed apical process, truncated at the end and broader than it is long; there is a sharp median longitudinal carina extending the whole length of the clypeus. The pronotum is moderately finely and closely punctured, with its lateral margins gently and uniformly curved, the front angles slightly acute and the hind angles obtuse. The scutellum is finely punctured, and the elytra are deeply punctate-striate, with the second stria broken up at the base into irregular punctures, and the fifth consisting of unconnected punctures which do not extend to the extremities. The pygidium is moderately finely and closely punctured. The front tibia bears a long and slender terminal tooth, a strong middle and a rather feeble uppermost one.

Length, 11 mm.; breadth, 6 mm.

PUNJAB: Suleiman Mountains.

Type in the Brussels Museum.

A badly-preserved specimen of this species in the Indian Museum is the only one I have seen. It is labelled "Suleiman Range. V. Ball, Esq." This throws light upon Kraatz's mysterious record "Suliman v. Ball. Range (Mus. Bruxellense et Kraatz)." I have not received a specimen from either of these collections and the Calcutta specimen is possibly the type.

295. Rhinyptia suturalis.

Rhinyptia suturalis, Kraatz, Deutsche Ent. Zeits. 1895, p. 104.

Testaceous yellow, with the head black, except the clypeus, a dark line upon the elytral suture (a little dilated just behind the scutellum) and usually an oblique mark on each side of the middle line of the pronotum on its posterior half. Sometimes a less distinct mark also occupies the corresponding place upon the anterior half and occasionally all are absent.

It is moderately elongate, rather parallel-sided, convex, and very shining above and beneath. The clypeus is narrow, punctured and sharply carinate along the middle; its sides converge to form a strongly recurved rostrum, rather shorter than it is broad and rounded at the end. The forehead is rugosely punctured. The pronotum is moderately and rather evenly punctured, with

the base very gently rounded, the front angles slightly acute and the hind angles obtuse. The scutellum bears a few punctures, and the elytra are rather deeply striate-punctate, the second and fifth rows of punctures not occupying striæ, the former disrupted in its anterior half and the latter abbreviated behind. The pygidium is moderately and evenly punctured and shining, and the metasternum rather coarsely punctured and thinly hairy. The front tibia is tridentate, the uppermost tooth feeble, and the front tarsus is very long and slender.

I have not seen a female of this species.

Length, 10–11 mm.; breadth, 5–6 mm.

Persia: Saidabad; Afghanistan: Gulistan; Punjab: Bannu (*Dr. Pennell*).

Type in the Berlin Entomological Museum.

296. Rhinyptia meridionalis.

Rhinyptia meridionalis, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 356.

Pale testaceous, with the clypeus and tarsi red, the rest of the head, the suture and posterior margins of the elytra, and an oblique mark on each side of the pronotum near the base, black. The sutural stripe is generally dilated around the scutellum, and in well-marked individuals there is an additional black mark upon the apical callus of each elytron. In pale specimens the thoracic marks disappear.

The shape is elongate-oval, and the whole body is very smooth and shining, with very scanty hairs beneath. The clypeus is glossy and almost unpunctured, with its sides convergent to the point of flexure, the median carina very sharp, and the rostrum short, with the front margin rounded. The forehead is finely and closely punctured. The pronotum is broad, convex, moderately finely and closely punctured, and gently rounded at the sides. The scutellum bears a few punctures, and the elytra are regularly and moderately strongly striate-punctate, the 2nd row of punctures breaking up in its anterior half. The pygidium is deeply and coarsely punctured, the metasternum coarsely punctured and thinly hairy. The front tibia is tridentate, the uppermost tooth being very obtuse and feeble; the larger claw of the front foot is cleft, and the smaller one is less than half as long as the larger and strongly curved.

Length, 12·5–13·5 mm.; breadth, 6–7 mm.

Ceylon: Peradeniya (*E. E. Green*, Oct., Nov.); Madras: Pallode, Trivandrum; Maddathorai, Travancore; Tenmalai, W. Ghats; Chikkaballapura (*T. V. Campbell*).

Type in the British Museum.

R. meridionalis var. puncticollis, nov.

Pale testaceous, with the clypeus and tarsi red, the rest of the head, the elytral suture, a pair of anterior spots and a larger pair

of posterior spots close to the middle line of the pronotum, black. The sutural stripe is more or less dilated round the scutellum, the humeral and apical calli are generally a little darkened, and the extreme edges of prothorax, scutellum and elytra are also dark. In pale specimens the spots disappear.

The shape and sculpture are practically the same as in the type form, but the pronotum is rather more strongly punctured.

Length, 13–14 mm.; breadth, 6·5–7 mm.

United Provinces: Dehra Dun, 800 ft. (*C. F. C. Beeson*, March); E. Bengal: Khulna (March, Indian Museum).

This species is an interesting straggler in a really Palæarctic genus. It rather closely resembles *R. suturalis*, especially in its northern race (var. *puncticollis*), but it is larger, the eyes are rather larger in proportion, the pronotum is relatively broader, and the shorter front claw of the male is much shorter. Well-coloured specimens of the var. *puncticollis* are distinguished from the type-form by the additional pair of spots at the front of the pronotum, but in both forms the thoracic markings are liable to disappear entirely. The variety also differs in its more strongly punctured pronotum, while in the male the ædeagus is rather longer and narrower. It is probable that in Central India intermediate forms linking these two known races will be found to exist.

297. **Rhinyptia læviceps**, sp. nov.

Pale testaceous yellow, with the clypeus and tarsi reddish, and the forehead and vertex nearly black.

Elongate-oval in shape, moderately convex, very smooth and shining, with a thin clothing of hair beneath. The head is extremely glossy and only scantily and very lightly punctured. The forehead is a little depressed between the eyes, the clypeal suture distinct, but not elevated, the clypeus triangular, with its sides strongly converging from the base, the apical process about as long as it is broad, gently recurved and rounded in front, and slightly elevated in the middle, but without a sharp carina. The pronotum is rather narrow, very feebly and inconspicuously punctured, with a lightly impressed median groove, the sides lightly rounded, the front angles nearly right angles, and the hind angles rounded. The scutellum is finely punctured, and the elytra are very lightly punctate-striate, the second, fourth and fifth intervals wide and rather irregularly punctured along the middle. The pygidium is rather coarsely, but not closely, punctured. The front tibia is armed with three teeth, the terminal one very slender and the uppermost very feeble.

I have only seen a single male.

Length, 12 mm.; breadth, 6 mm.

Sind: Karachi.

Type in the British Museum.

Division IV. ADORRHINYPTIINI.

The three species for which I have made the genus *Adorrhinyptia*, and which have not hitherto been distinguished from *Rhinyptia*, really form a separate, highly peculiar and interesting group. While the true *Rhinyptia* is quite evidently only a modified form of the *Anomala* group and some of its African species are very closely related to *Anomala* itself, the species with a hairy covering which I here separate from it have several important points of difference. Although in the primary character (*i. e.* the flat horizontal labrum) by which the Anomalini are divided from the Adoretini, *Adorrhinyptia* is typically Anomaline, in many other essential features of that group it is deficient and shows affinity rather to the Adoretini. Thus it is without the membranous margins to the elytra, which form an invariable mark of the Anomalini, and the joints of the antennæ are ten in number, and not nine as in that group. The last abdominal spiracle is situated close to the hinder margin of the penultimate segment, as in the Adoretini, and not midway between the front and hind margins. In the sculpture of the elytra and the form of the claws it also shows a striking resemblance to *Adoretus*, while the ædeagus of the male is entirely of the characteristic Adoretine type, with the orifice dorsal, and not ventral as in *Rhinyptia* and all the Anomalini. In fact, but for the close similarity of the organs of the mouth to those of *Rhinyptia*, I should certainly assign it to the Adoretini; but the structure of the labrum is quite different and makes it impossible to dissociate it entirely from *Rhinyptia*. Altogether it presents a very interesting problem in classification.

Genus ADORRHINYPTIA, nov.

Type, *Rhinyptia dorsalis*, Burm.

Range. India.

Body ovate, not very long, and rather depressed, with a rather close covering of fine decumbent hair above and beneath. Eyes very large and prominent; the clypeus small, rapidly narrowing from the eyes forward and forming in front a short recurved rostrum, which is bluntly rounded at the end, densely clothed with erect hair and longitudinally carinate along the middle. The antennæ are 10-jointed, the first joint long and slender, the second globular, the third to the seventh progressively diminishing. The labrum is thin, horizontal and obtusely angular in front. The mandible is short, produced to a sharp point and with a strong molar part. The maxilla is armed with six very sharp slender teeth parallel to one another; the three-jointed palpi attached near the extremity. The mentum is broad and excised at its anterior margin. The pronotum is broad, margined all round and very feebly prominent in the middle of the hind edge. The elytra are without membranous margins. The

pygidium is clothed with rather thick erect hair. The front tibia is armed with three sharp teeth separated by rather acute notches. The claws are slender and very unequal, and the longer one of the front and middle feet is minutely cleft at a little distance from the apex.

♂. The abdomen is a little arched beneath, the pygidium vertical, and the last ventral segment short and emarginate in the middle.

♀. The pygidium is short and sloping, the abdomen convex beneath and the last ventral segment long and pointed.

Key to the Species.

1 (2)	Elytra with separate punctures	*ruficollis*, Kr.
2 (1)	Elytra rugosely punctured.	
3 (4)	Elytra with a wide pale border	*dorsalis*, Burm.
4 (3)	Elytra almost or entirely black	*fusca*, sp. n.

298. **Adorrhinyptia ruficollis.**

Rhinyptia ruficollis, Kraatz, Deutsche Ent. Zeits. 1895, p. 106.

Pale yellow, with the clypeus, the middle of the pronotum and the tarsi rather bright red, the posterior part of the head black, and a broad, but ill-defined sutural band upon the elytra brown.

It is ovate and rather depressed in form, and clothed above and beneath with fine yellowish hair. The head is shining and coarsely but not very closely granulated, with the clypeus narrow, its sides very gently curved and gradually converging to form a short, strongly recurved rostrum, shorter than it is wide and rounded at the end. The pronotum is strongly and closely punctured, with its sides rounded, the front angles slightly acute and the hind angles rounded off. The scutellum is rather finely punctured, and the elytra coarsely, the punctures of the latter quite distinct, except upon the subsutural interval. The costæ are not very distinct. The pygidium is finely punctured and clothed with short erect hair. The sides of the metasternum bear rather close shallow punctures. The front tibia is armed with three teeth, the two lower ones long and sharp, the third minute and separated from the second by an acute notch; the longer claw of the front and middle feet is minutely cleft at a distance from the tip.

♂. All the teeth of the front tibia are acute.

♀. The two lower teeth of the front tibia are very oblique and the third tooth is very feeble.

Length, 9–10 mm.; breadth, 4·5–5·5 mm.

BENGAL: Calcutta (*E. T. Atkinson*).

Type in the Berlin Entomological Museum.

299. **Adorrhinyptia dorsalis.**

Rhinyptia dorsalis, Burm.,* Handb. Ent. iv, 2, 1855, p. 494.

Testaceous yellow, with the head (except the clypeus) black, and the pronotum and elytra dark brown, with the sides decorated

with a complete, rather broad, but not sharply limited, yellow border. The clypeus and tarsi are red, and there is sometimes a narrow median longitudinal red line upon the pronotum.

It is ovate, somewhat depressed, and clothed above and beneath with rather close yellowish hair. The head is shining and coarsely, not closely, granulated, with the clypeus small, its sides gradually converging to form a strongly recurved rostrum about as long as it is wide and rounded at the end. The pronotum is strongly and closely punctured, with its sides evenly rounded, the front angles nearly right angles and the hind angles rounded off. The scutellum is rather finely punctured, and the elytra are coarsely and rather confluently punctured, with not very distinct costæ. The pygidium is finely punctured and clothed with erect hairs. The sides of the metasternum bear rather coarse and close punctures. The front tibia is armed with three strong teeth, the second and third separated by a sharp notch, and the longer claw of the front and middle feet is minutely cleft at a distance from the tip.

♂. The longer front claw is angulated at a little distance from the tip, but hardly perceptibly cleft.

Length, 9–10 mm.; breadth, 5–6 mm.

BENGAL: Chapra (*G. R. Dutt*, July), Pusa (July), Tinpahar, nr. Rajmahal; CENTRAL PROVINCES: Nagpur, Sukna, 500 ft. (July); PUNJAB: Suleiman Hills.

Type in the Halle University Museum.

300. **Adorrhinyptia fusca**, sp. nov. (Plate IV, fig. 26.)

Ferrugineous red, with the femora and tibiæ yellow; the forehead, vertex, the disc of the pronotum (generally), the elytra (sometimes with the lateral margins remaining pale) and the pygidium, nearly black.

It is ovate in form, rather depressed, and clothed above and beneath with soft yellowish hair. The clypeus is very shining and strongly granulated, with its sides gently curved and gradually converging to form a narrow, strongly recurved rostrum, about as long as it is wide, rounded at the end and gently carinate along the middle. The forehead is also strongly granulated. The pronotum is closely, evenly and rather finely punctured, with its sides gently rounded, the front angles slightly acute and the hind angles rounded off. The scutellum is rather finely punctured, and the elytra are densely rugose, with slight traces of three discoidal costæ. The pygidium is finely punctured and clothed with short erect hair. The sides of the metasternum bear rather close shallow punctures. The front tibia is armed with three moderately strong teeth, the two upper-

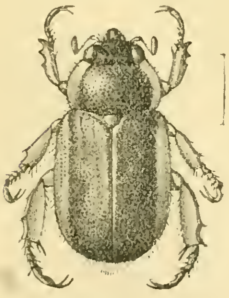

Fig. 58.—*Adorrhinyptia fusca.*

most separated by an acute notch, and the longer claw of the front and middle feet is very minutely cleft at a short distance from the apex.

♂. The teeth of the front tibia are sharper than in the female.

Length, 10 mm.; breadth, 5 mm.

S. Bombay: Belgaum (*H. E. Andrewes*).

Type in the British Museum; co-types in Mr. H. E. Andrewes' collection.

Division V. ADORETINI.

The beetles comprising this division are characterized by their generally small size and dull, unattractive colour, almost invariably accompanied by a clothing of short hairs or setæ above as well as beneath. They are nearly all nocturnal in their habits, destroying the foliage of trees and shrubs, and frequently attracted into houses by light. The group is peculiar to the Old World and confined to tropical or subtropical regions.

Although there is considerable resemblance between the Adoretini and certain Anomalini, it is quite superficial, for the structure of the mouth is very different. In the present group

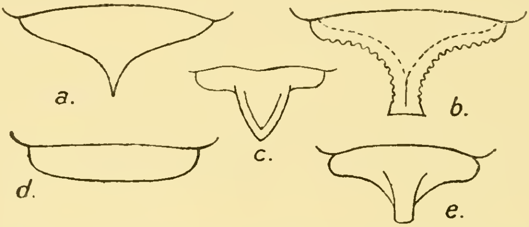

Fig. 59.—Labrum of:—a, *Trigonostomum*; b, *Adoretus*; c, *Scaphorrhinadoretus*; d, *Prodoretus*; e, *Pachyrrhinadoretus*.

the labrum, instead of being simply a horizontal lip roofing the mouth-cavity, is produced downwards in front so as to present a very evident anterior face, which in a few species is rectangular in shape, in others triangular, the apex of the triangle applied to the front edge of the mentum; but in the great majority it is much more highly developed, the free lower edge being produced as a long recurved rostrum across the mouth, which it completely divides into two halves, the extremity of the rostrum interlocking with, or lying upon, the front edge of the mentum. The result of this remarkable conformation is that the mandibles, and apparently the maxillæ also, are incapable of meeting, as in practically all other insects, but work instead against the right and left sides respectively of the labrum. The whole of the latter is extremely hard, as highly chitinous indeed as the mandibles, and generally ridged or serrated at the sides, which form

concave masticating surfaces. Into the curve the strong terminal lobe of the mandible closely fits, and thus to all intents and purposes both mouth and jaws are duplicated. The mandibles meet at their inner basal part, where there is a very hard molar or grinding surface. The maxilla (except in the degenerate *Heterophthalmus*) bears three, four or five short, but very strong, finger-like teeth, radiating and more or less overlapping at their outer edges, like the leaves of a fan, and one of the inner teeth is generally broad and quadrate and appears as if separately articulated at the base of the others. The palpus is either simple and threadlike, or with the last joint short and conical. The mentum varies very greatly in form, being correlated with the labrum in its different phases, and generally notched or grooved at the middle to receive the extremity of the latter; but in *Schizadoretus* its front margin is produced into two sharp points, which are so prominent as to be visible from above. The antennæ are normally 10-jointed, but occasionally there are only nine joints, and in *Pseudadoretus* there are ten in the males and nine in the females. The front tibia is armed with three external teeth and occasionally serrated above the teeth, the claws are long and very unequal, and generally the longer one of the front and middle feet is cleft at the tip.

The outer edges of the elytra are not fringed with a thin membrane, as in the ANOMALINI, but in some species of *Adoretus* there is a smooth opaque epipleura of a different texture from the remaining surface. The last abdominal spiracle is situated close to the hinder margin of the penultimate dorsal segment, and in some of the species the abdomen has a sharp keel along each side, which may be continued obliquely across the corner of that segment and so cut off the spiracle.

The differences between the sexes are important and must be carefully attended to if the accurate discrimination of the species is to be attempted. The abdomen is convex in the female, and straight or slightly concave in the male; the last ventral segment is large and more or less triangular in the former, and short and transverse in the latter; and the pygidium is short and oblique in the female, and larger and much more convex in the male. In addition, the eyes are often much larger in the male than in the female, the clypeus being then correspondingly reduced; the club of the antenna is often longer; and where the longer front and middle claws are cleft, the two divisions are approximately equal in the female and very unequal in the male, the cleft being often at a distance from the end and sometimes almost obliterated. In *Lissadoretus* the claws are all undivided in the female, while in the male they are of the normal type.

The different genera have little to distinguish them superficially, but there are great differences in the structure of the mouth, and therefore in the manner of feeding.

The predominant genus, *Adoretus*, is the only one of whose habits anything is known. It consists of a very large number

of closely similar species, some of which occur in enormous profusion and have been found to cause serious damage to cultivated crops, upon the roots of which the larvæ feed.

In the genus *Adoretus*, which contains the vast majority of the known species, the remarkable formation renders it necessary for one side only of the mouth to be used at a time. A leaf (of *Cassia*) attacked by *Adoretus versutus* which has been sent to me has oblong holes eaten out of it in pairs, the beetle having apparently fed first on one side and then on the other, moving slowly backwards but not otherwise altering its position, and leaving a narrow strip of leaf intact in the middle. If this is characteristic of the species of this genus it will make the recognition of damage due to them simple and certain, but it still awaits confirmation.

At my request, Mr. F. H. Gravely has carefully watched the feeding process in *Adoretus versutus*, and the result is described by him in "Records of the Indian Museum," xi, 1915 (p. 499). He finds that the insect rests upon the flat surface (generally the lower surface), not the edge of the leaf, and bites holes in the latter, turning its head slightly to one side or the other to do so and using only the organs of that side of the mouth. The principal instrument in this operation is the peculiar broad fan-shaped maxilla, which scoops out and draws into the mouth small quantities of the soft leaf-tissue. Mr. Gravely thinks that an important function of the mandibles, apart from the basal masticatory mill, is to protect the maxillæ and to close the two mouth openings when not in operation.

Key to the Genera.

1	(8)	Labrum without a median process.	
2	(3)	Clypeus straight or regularly rounded	PRODORETUS, Brens., p. 279.
3	(2)	Clypeus pointed or lobed.	
4	(5)	Clypeus acuminate	OXYADORETUS, g. n., p. 281.
5	(4)	Clypeus lobed.	
6	(7)	Clypeus narrow, consisting of two lobes	SCHIZADORETUS, g. n., p. 283.
7	(6)	Clypeus broad, consisting of four lobes	PHÆADORETUS, Reitt., p. 284.
8	(1)	Labrum with a median process.	
9	(10)	Process of the labrum free, not bisecting the mouth	PACHYRRHINADORETUS, Oh., [p. 285.
10	(9)	Process of the labrum bisecting the mouth, not free.	
11	(12)	Mandibles reduced, process of the labrum minute	HETEROPHTHALMUS, Bl., [p. 288.
12	(11)	Mandibles large.	
13	(18)	Process of the labrum pointed.	
14	(17)	Process of the labrum small, not dilated nor concave in front.	
15	(16)	Labrum serrate at the sides ..	TRIGONOSTOMUM, Burm., [p. 289.

16 (15) Labrum not serrate at the sides	[p. 290. RHAMPHADORETUS, Oh.,
17 (14) Process of the labrum large, dilated, concave in front	[p. 292. SCAPHORRHINADORETUS, Oh.,
18 (13) Process of the labrum ribbon-like, not pointed.	
19 (20) Labrum rounded at the end, not serrate at the sides	LISSADORETUS, g. n., p. 293.
20 (19) Labrum truncate at the end, serrate at the sides.	
21 (22) Maxillary palpi clubbed; hind tibia very short and broad at the end	PSEUDADORETUS, Sem., p. 294.
22 (21) Maxillary palpi filiform; hind tibia not much dilated at the end	ADORETUS, Cast., p. 295.

Genus **PRODORETUS.**

Prodoretus, Brenske, Soc. Ent. viii, 1893, p. 1; Ohaus, Deutsche Ent. Zeits. 1912, p. 269.

TYPE, *Prodoretus vittatus*, Brenske (Madagascar).

Range. Tropical Africa, India, Madagascar.

Body ovate and convex. Eyes large and prominent; clypeus small, semicircular or trapezoidal. Antennæ 10-jointed, club moderately long. Labrum transverse, without median lobe (see fig. 59 *d*). Mandibles strong, interlocking, not toothed, molar ridges very coarse. Maxilla and labium very various. Maxilla with 2–4 teeth, blunt or very sharp, palpus generally slender. Labium broad and truncate, or long and attenuated, with palpi widely separated or close together. Front tibia sharply 3-dentate, the two upper teeth separated by a sharp notch.

A number of species of very varied head- and mouth-structure have been put together under the name of *Prodoretus* by Ohaus. They agree only in having the labrum not produced in the middle, and it is not easy to see why *Phœadoretus* was not also added. They appear to be rare insects, and it is perhaps wise to await additional means of studying them before attempting a satisfactory classification. I do not know the two Indian species included by Ohaus, whose descriptions I have translated as follows:—

301. **Prodoretus bombayanus.**

Prodoretus bombayanus, Ohaus, Deutsche Ent. Zeits. 1912, p. 273.

"Cylindrical, convex, shining testaceous-yellow, rather paler beneath, the anterior part more reddish yellow, the head blackish brown, all the margins and the teeth of the front tibiæ dark.

Head rather large, with large eyes, the clypeus nearly semicircular, with a finely reflexed margin, reddish brown, with moderately close annular punctures, the walls of which disappear posteriorly, each puncture with a short backwardly directed seta.

Clypeal suture quite fine and straight, head lightly shining, forehead like the clypeus, vertex quite finely simply punctured. Antennæ 10-jointed, with the club almost as long as the footstalk. Thorax relatively long, hardly dilated in the middle, finely margined all round, hind angles gently rounded, front angles and middle of the front margin slightly produced, lateral margin setose, upper surface with moderately close annular punctures, each with a very short whitish seta. Elytra with slightly elevated primary costæ, the primary rows of punctures and the intervals with annular punctures, which on the disc (not at the sides) are united by fine short transverse rugæ; each puncture with a quite short seta; lateral margin finely and closely crenulated, the epipleuræ extending to the posterior edge of the hind coxæ. Pygidium vertical, rather long and acute, flat before the apex, elsewhere rather convex, sparsely punctured, each puncture with a long fine greyish-white hair. Last ventral segment emarginate behind, shorter than the penultimate, all the sternites with a slight marginal edge, sparsely clothed with short whitish hair, like the breast and the coxæ, the penultimate one also with a transverse row of bristles. Prosternum without a process. Front tibia tridentate, the tarsi relatively long and slender, at least the front ones, the claws very unequal in length, the larger one on the front and middle feet slightly cleft.

Length, 9·5 mm.; breadth, 5 mm.

BOMBAY: Belgaum."

Type in Dr. Ohaus' collection.

302. Prodoretus malabariensis.

Prodoretus malabariensis, Ohaus, Deutsche Ent. Zeits. 1912, p. 274.

"Elongate, almost parallel-sided, moderately convex, pale testaceous-yellow, the head blackish brown, not very shining on account of the close and rather long white hair.

Head small, only appearing large on account of the large and prominent eyes; clypeus reddish, hardly broader than long, parallel-sided, with the angles slightly rounded, the front margin a little produced and only feebly reflexed, rather closely covered with annular punctures, whose walls are partly lost, so that only transverse elevations remain, in each puncture is an erect whitish seta. The head is similarly sculptured and clothed, the vertex scarcely more sparsely. Thorax slightly convex, hardly dilated in the middle, hind angles bluntly rounded, front angles a little produced, with close ocellate punctures everywhere and in each puncture a whitish seta. Scutellum very closely punctured. The primary costæ of the elytra, with the exception of the sutural costa, are scarcely elevated, all the intervals closely punctured, the punctures with white setæ. These costæ are well marked, however, from the fact that the punctures of the primary rows are rather larger and arranged in regular rows, with the contained

hairs also forming rows, unlike the irregular punctures and hairs of the intervals. Pygidium rather long, vertical, with slightly truncated apex, everywhere closely punctured and clothed with long hair, only the part before the extremity shining and almost bare. Ventral segments sparingly, breast more strongly, hairy. Legs moderately strong, sparingly clothed with long hair; front tibiæ with three long teeth, the spur at the inner edge long, bent downwards and outwards; middle and hind tibiæ slightly swollen externally, scarcely constricted before the end; tarsi rather long and strong, with the claws very unequal in length, the inner hind one wanting or reduced to a hardly visible rudiment. Antennæ 10-jointed, with the club hardly as long as the foot-stalk, excluding the basal joint. Mouth-parts small, but well developed. Labrum rather shorter than the anterior face of the clypeus, mandibles and labium as in the preceding species, the chisel-shaped tooth of the maxilla still larger but the sharp ventral tooth adjoining it a little smaller: on the dorsal side also a small, sharp free tooth.

The species resembles at first sight *Heterophthalmus ocularis*, Bl., from Pondichery, but is smaller, and easily distinguished by the form of the labrum, which in Blanchard's species bears a tooth-like middle process.

Length, 9 mm.; breadth, 4 mm.

MADRAS: Travancore, 1000–2500 ft. (Dec.)."

Type in Dr. Ohaus' collection.

Genus OXYADORETUS, nov.

TYPE, *Oxyadoretus nasutus*, sp. n.

Range. India.

Body elongate-oval, rather depressed, thinly clothed with minute setæ above. Head not large, eyes large, clypeus narrow, with the front margin reflexed and produced to a point in the middle. Anterior face of the labrum short and broad, with the lower edge nearly straight, not at all produced in the middle and not serrated. Mandibles regularly rounded externally, with the apex simple, very sharp, and the molar surface large. Maxilla short, very stout, consisting of two closely fitting lobes, the outer one large and broad, the inner small and sharply pointed, the two together forming a subquadrate plate; last joint of the palpus ovate, not much enlarged. Mentum short, the terminal part consisting of two rounded diverging lobes clothed with long hairs; palpus moderately long, with the last joint oval, not enlarged. Antenna 10-jointed. Legs not very long; front tibia armed with three strong sharp teeth, divided by acute notches; claws very unequal, the longer one cleft on the front and middle feet.

♂. The longer front and middle claws are very minutely cleft at a distance from the apex.

♀. Unknown. The eyes are probably smaller and the clypeus may be of different shape.

In addition to the sharply pointed clypeus in this genus, the organs of the mouth are very distinctive.

Key to the Species.

Upper surface scarcely shining; punctures closer	*nasutus*, sp. n.
Upper surface rather shining	*lætus*, sp. n.

303. **Oxyadoretus nasutus**, sp. nov. (Plate V, fig. 3.)

Pale testaceous, with the clypeus and tarsi red, the forehead and vertex black, and the pronotum decorated with a rather indefinite brown patch on each side of the middle line.

Elongate-oval, moderately depressed and clothed with extremely fine, uniform pale setæ. The head is moderately closely and evenly rugulose, with the clypeus narrow, semi-elliptical, the front margin produced in the middle into a sharp reflexed angle. The pronotum is finely and closely punctured, rather less closely at the sides, which are strongly rounded, with the front angles right angles and the hind angles rounded. The scutellum is acute-angled and closely punctured. The elytra are rather coarsely and confluently punctured, with the costæ not very distinct. The pygidium is rather thickly clothed with soft short erect hair, thinner towards the apex, which is rather smooth and shining. The front tibia is rather broad and armed with three very sharp teeth. The claws are very unequal, the shorter one of the hind foot less than half as long as the longer.

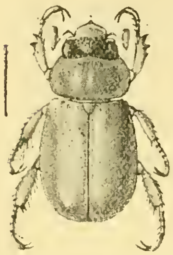

Fig. 60.—*Oxyadoretus nasutus*, ♂.

Length, 10 mm.; breadth, 4·5 mm.

I have seen only a single male in the British Museum, formerly in the collection of the late Alexander Fry and labelled "India Orient."

304. **Oxyadoretus lætus**, sp. nov. (Plate V, fig. 2.)

Bright yellow, with the pronotum orange, the clypeus and tarsi red, and the forehead and vertex black.

Moderately elongate and depressed, rather shining and thinly clothed above with minute and uniform pale setæ. The head is rather shallowly and not very closely rugulose, with the clypeus semi-elliptical, strongly reflexed in front and produced in the middle of the front edge to an obtuse point. Pronotum rather strongly and moderately closely punctured, with the sides gently

curved, the front angles right angles and the hind angles very obtuse. The scutellum is well punctured, and the elytra are rather finely and distinctly punctured, with somewhat feebly indicated costæ. The pygidium is rather smooth and shining, with a clothing of erect but not long hair. The front tibia is fairly broad and armed with three very sharp teeth.

Length, 11 mm.; breadth, 5 mm.

MADRAS: Malabar.

I have seen only a single male specimen and this is in the British Museum.

Genus SCHIZADORETUS, nov.

TYPE, *Schizadoretus rufescens*, sp. n.

Range. Bengal.

Clypeus very small, nearly semicircular in shape, with the margin strongly reflexed and a little excised in the middle, its vertical face long, the length nearly half its breadth. Labrum large, rather rectangular, gently emarginate at the front margin, without a median process. Mandibles short and not produced at the apex. Maxilla armed with four very sharp slender teeth,

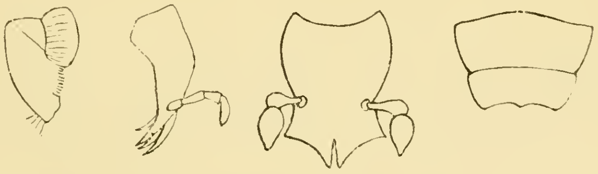

Fig. 61.—Mouth-parts of *Schizadoretus rufescens*. *a*, mandible; *b*, maxilla; *c*, mentum; *d*, clypeus and labrum (anterior face).

three of them terminal; palpi slender, the last joint oval. Mentum large, produced and sharply bifid at the end, with the points visible from above; palpi very short and thick, with the terminal joint subglobular. Antennæ 10-jointed, with the club rather long. Eyes prominent. Legs moderately slender, the front tibia armed with three very strong teeth, the longer front and middle claws cleft very minutely in both sexes.

Only one species is known at present.

305. Schizadoretus rufescens, sp. nov.

Pale ferrugineous red, with the head (except the clypeus) black and the femora pale.

It is moderately elongate in shape, and clothed above and beneath with rather coarse white setæ. The head is rugosely punctured, with the clypeus rather smooth, shining and almost without setæ. The pronotum is coarsely punctured, strongly rounded at the sides, with the front angles acute and the hind angles rounded off. The elytra are coarsely and closely punctured, with moderately well-marked costæ. The pygidium is finely coriaceous and clothed with uniform, short, erect setæ. The teeth of the front tibia are large and sharp.

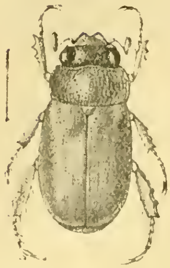

Fig. 62.—*Schizadoretus rufescens.*

♂. The eyes are larger than in the female, the clypeus more deeply notched, and the pygidium is longer, more exposed and nearly smooth and bare at the apex.

Length, 10–10·5 mm.; breadth, 4·5–5 mm.

BENGAL: Pusa (June).

Taken by Mr. T. Bainbrigge Fletcher at light.

Genus PHÆADORETUS.

Phæadoretus, Reitter, Verh. Nat. Ver. Brünn, xli. 1903, p. 31; Ohaus, Deutsche Ent. Zeits. 1912, p. 268.

TYPE, *Adoretus comptus*, Mén.

Range. Turkestan, Persia, Baluchistan, Sind.

Elongate-oval, clothed above and beneath with minute white setæ. Head rather narrow, with the eyes not large or prominent. Clypeal margin strongly reflexed and produced in front into two rounded lobes which, with the rounded sides, give the effect of a fourfold division. Antennæ 10-jointed, with the club moderately long. Labrum broad, vertical, without a median process. Mandibles meeting one another, blunt at the extremity, without teeth. Maxilla terminating in three strong teeth; palpus long, with the terminal joint broadly oval. Mentum short, broad, very prominent beneath, with the ligular part very broad and 4-lobed in front, and the palpi short. Elytra long, covering the pygidium. Legs moderately long, the front tibia armed with three teeth, the second much nearer the first than the third.

♂. The pygidium is convex, but rather short, and the abdomen is nearly straight beneath. The longer front and middle claws are scarcely perceptibly cleft at the extremity.

♀. The abdomen is convex beneath, and the longer front and middle claws are minutely cleft at the tip.

Only a single species is known.

306. Phæadoretus comptus.

Adoretus comptus, Ménétr., Mém. Acad. Pétersb. vi, 1849, p. 62, pl. ii, f. 13.

Adoretus syriacus, Blanch., Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 232.

Leaden black in colour, with the antennæ and legs deep red, and clothed, not very closely, with short whitish setæ, those upon the elytra arranged in longitudinal lines.

It is rather narrow in shape, with the elytra long and entirely covering the pygidium. The head is rather narrow, and closely, but rather coarsely rugose, with the clypeal margin strongly reflexed and produced in the middle into two slight rounded lobes. The pronotum is coarsely but rather closely, and at the sides confluently, punctured; its sides are obtusely angulated in the middle, feebly serrated in front, with the front angles acutely produced and the hind angles obtuse. The scutellum is strongly punctured, and the elytra have the primary costæ well marked, rather narrow and strongly elevated, and the intervening spaces broad and closely pitted. The pygidium bears short erect setæ.

Length, 11–13 mm.; breadth, 5–6·5 mm.

UPPER SIND: Dadur Kuchee (*Dr. A. H. Leith*); BALUCHISTAN: Quetta, Ormarah (*W. D. Cumming*), Nushki District; AFGHANISTAN; PERSIA; BOKHARA; TURKEY.

Adoretus seriesetosus, which inhabits the same region, bears a remarkable resemblance to this insect, but the conformation of the mouth is entirely different.

Genus **PACHYRRHINADORETUS.**

Pachyrrhinadoretus, Ohaus, Deutsche Ent. Zeits. 1912, p. 509.

TYPE, *Pachyrrhinadoretus rugipennis*, Ohaus.

Range. India.

Oval, convex, rather smooth and shining, and thinly clothed with fine hair. Eyes somewhat prominent. Clypeus rather small, semicircular, with strongly rounded and reflexed margin. Antennæ 10-jointed, the club not very long. Labrum rather large, rectangular in front and produced in the middle into a blunt rounded lobe (fig. 59 *e*), which is free in front and not produced backwards. Mandibles large, meeting behind the median process of the labrum, their apical lobes long and bluntly bidentate at the apex. Maxilla deeply cleft at the extremity, with the outer lobe blunt and truncated, and the inner one very sharp; palpi stout, not long. Mentum broad, transversely quadrate, with the anterior part extremely short and its front margin nearly straight; palpi rather long. Legs stout, the front tibia rather feebly tridentate, but the two upper teeth separated by a sharp notch; claws very long and unequal, the longer one on the front and middle feet very minutely cleft at the apex.

♂. The abdomen is well arched and the pygidium exposed.

♀. The upper surface is smoother, less punctured and less pubescent than that of the male, the eyes are rather smaller and less prominent, the abdomen very convex beneath and the pygidium concealed by the elytra. The front tibia is shorter and its teeth are much stronger and sharper.

The club-shaped projecting rostrum or median lobe of the labrum is very peculiar.

Key to the Species.

Pronotum lightly punctured (♂) or scarcely punctured (♀) .... *rugipennis*, Oh.
Pronotum densely punctured (♂) or well punctured (♀) .... *frontatus*, Burm.

The features by which Dr. Ohaus has distinguished the species of this genus are variable and of little value, but his excellent figures of the ædeagi of the males render exact identification of that sex possible, and I think the characters stated above will enable both sexes to be recognised without much difficulty.

307. **Pachyrrhinadoretus rugipennis.** (Plate V, figs. 4–10.)

Pachyrrhinadoretus rugipennis, Ohaus, Deutsche Ent. Zeits. 1912, p. 511.
Pachyrrhinadoretus deccanus, Ohaus, l. c. p. 512.
Pachyrrhinadoretus monticola, Ohaus, l. c.

Orange-yellow, with the forehead dark and (in the ♂) usually the pronotum also and frequently the elytra, except the outer margins. The body is clothed, above and beneath, with very fine grey pubescence, which is moderately close in the male, sparser in the female.

It is extremely similar in shape and general appearance to *P. frontatus*, Burm. The head is rugosely punctured, but not very finely or closely, and the clypeus rather sparingly. The pronotum is fairly closely punctured in the male, very sparsely at the sides in the female, and almost devoid of punctures in the middle. In other respects it agrees with *P. frontatus*, Burm.

The sexes differ as in *P. frontatus*, but the pronotum of the female is still more smooth. The female is generally entirely pale, except the head, but the middle of the pronotum may also be dark. In one specimen in the British Museum the pronotum is pale and the elytra are dark (except the outer margins).

Length, 9·5–11 mm.; breadth, 5–6 mm.

Bengal: Palamow (Nov.), Chapra, Kurnul; Bombay: Ahmedabad, Prantig (Nov.), Belgaum (*H. E. Andrewes*), Dharwar, Kanara (*T. R. D. Bell*); Madras: Madura (*C. Somers-Smith*).

Although the collector's name is not given, it is evident from the localities enumerated by Dr. Ohaus (Belgaum, Kanara, Madura) that *P. deccanus* was described from specimens obtained by Mr. H. E. Andrewes from those localities. These were sent to Berlin, and a set was retained by Dr. Kraatz. I have examined and dissected series from each of these localities and have been surprised to find that, although externally they are practically alike, the ædeagi show a remarkable range of variation. In examples from Madura the organ (Plate V, fig. 9) is as represented by Dr. Ohaus, but those from Kanara and Belgaum have a greater resemblance to, and indeed form a chain of connecting links with, the *rugipennis* form. There is some variation in specimens from the same locality, but more marked differences distinguish specimens from

different localities. The figures given by Dr. Ohaus as distinctive of *P. rugipennis* and *P. deccanus* respectively seem to represent the extremes, the typical *P. deccanus* form occurring only in the south of the peninsula, while specimens from localities successively farther north exhibit progressive attenuation of the ædeagus (as shown here in Plate V, figs. 4 to 10), until at Ahmedabad practically the *rugipennis* form appears. No corresponding external differences have been found, and the females are indistinguishable. Since there seems to be no practical use in giving names to each link in this chain of local races, I have treated them as a single species with the name of *rugipennis*.

308. **Pachyrrhinadoretus frontatus.**

> *Adoretus frontatus*, Burm.,* Handb. Ent. iv, 2, 1855, p. 530.
> *Pachyrrhinadoretus costatus*, Ohaus, Deutsche Ent. Zeits. 1912, p. 511.

Orange-yellow, with the forehead dark and (in the male) also the clypeus, the middle of the pronotum and the elytra, except the elevated costæ and the outer margins. The body is clothed above and beneath with very fine grey pubescence, which is sparse, except upon the head, and the pronotum and pygidium of the male.

It is elongate-oval and slightly depressed. The head is very closely and rugosely punctured, and the clypeus semicircular. The pronotum is finely punctured, strongly and evenly rounded at the sides, with the front angles acute and the hind angles obsolete. The elytra are closely and rugosely punctured, with three well-marked smooth costæ rather far apart upon each.

♂. The three teeth of the front tibia are small, the abdomen is arched beneath, and the pygidium exposed and rather closely clothed with erect fine hairs.

♀. The colour is pale, except upon the forehead, the clypeus is rather longer and the eyes smaller. The pronotum is much less closely punctured, especially in the middle. The abdomen is convex beneath and the pygidium covered. The front tibia is short and broad, and the three teeth are very strong and sharp.

Length, 10–11·5 mm.; breadth, 5–6 mm.

BENGAL: Pusa (Oct., at light).

Type in the Halle Museum, that of *P. costatus* in Dr. Ohaus' collection.

In the Hope collection at Oxford are a male and a female labelled "Central India—Boys," and I have no doubt that Burmeister's type, which has been lent to me for comparison, was sent to him from Oxford and was one of this series. It is the female, however, which he has described, and the original description therefore contains two vital mistakes, the locality "Assam" and the statement that it applies to the male. There are also specimens from Boys' series in the British Museum. Dr. Ohaus has mistakenly referred the species to the genus *Pseudadoretus* (Deutsche Ent. Zeits. 1914, p. 514).

Genus HETEROPHTHALMUS.

Heterophthalmus, Blanch., Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 234; Ohaus, Deutsche Ent. Zeits. 1912, p. 280.

Type, *Heterophthalmus ocularis*, Bl.

Range. South India.

Body small, differing greatly in shape in the two sexes, with a very scanty and inconspicuous clothing of minute hairs above and beneath.

The organs of the mouth are much reduced. The labrum is only slightly visible externally, scarcely vertical, with a very minute but acute process in the middle. The mandibles are small, not highly chitinised, not meeting or co-adapted, bluntly rounded at the extremity and with a feeble molar surface. The maxilla is acuminate, but not toothed. The labium forms a small rounded lobe. The clypeus is narrow, rather long relatively and strongly reflexed at the front margin. The front tibia is armed with three blunt teeth, and the longer claw on the front and middle feet is very minutely cleft; there are two spurs to the hind tibia in both sexes (not one only in the ♂, as presumed by Dr. Ohaus).

♂. The body is rather narrow and parallel-sided. The eyes are very large and prominent, and the clypeus correspondingly reduced, the forehead being only a little wider than the diameter of the eye. The antennæ are 9-jointed and the club longer than the foot-stalk. The legs are slender and the tarsi very long; the two claws of the front foot are very unequal. The pygidium is convex.

♀. The body is short and broad, and the elytra dilated to behind the middle. The eyes are rather small. The antennæ are 9-jointed and the club much shorter than the foot-stalk. The legs are shorter than in the male, the tarsi very short; the hind femur and tibia are very short and thick. The pygidium is rather flat.

There is only one known species, taken in 1836 by Perrottet, and I believe never found again.

309. Heterophthalmus ocularis.

Heterophthalmus ocularis, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 234.

Uniformly reddish testaceous, with minute sparse greyish hairs above and beneath.

The head and clypeus are coarsely and rather closely punctured, the vertex less closely. The pronotum is strongly punctured, with the sides strongly rounded and all the angles very obtuse. The scutellum bears a few large punctures, and the elytra are coarsely, closely and confluently punctured, with three narrow, rather prominent costæ outlined by double rows of punctures. The pygidium is rather finely, but not very closely, punctured.

♀. In addition to the differences already enumerated, the female is more thinly setose and more shining than the male.

Length, 7–8 mm.; breadth, 3·5–4·5 mm.

MADRAS: Pondicherry (*Perrottet*).

Type in the Paris Museum; co-type (female) in the British Museum.

Genus TRIGONOSTOMUM.

Trigonostomum, Burm., Handb. Ent. iv, 1, 1844, p. 466.

TYPE, *Trigonostomum mucoreum*, Burm. (Madagascar).

Range. Madagascar, Malay Archipelago, Ceylon.

Rather narrowly elongate, with the head small, the eyes very prominent, and the clypeal margin rounded and strongly reflexed. Antennæ 10-jointed. Labrum (fig. 59 *a*) rather short, serrated at the sides and produced to a sharp point in the middle. Mandible blunt at the tip. Maxilla armed with four teeth at the end; the palpi moderately slender, the last joint elongate-oval. Mentum longer than broad, almost parallel-sided, deeply notched behind the palpi, the front margin narrowed and sharply bidentate; palpi short, with the last joint oval. Legs slender, the front tibia armed with two sharp teeth and a feeble upper one; claws very unequal, the longer one cleft on the front and middle feet.

♂. The body is distinctly arched beneath, and the club of the antenna is rather long.

The females of this genus appear to be more rarely found than the males.

Only one Indian species is known.

310. Trigonostomum ursus. (Plate V, fig. 1.)

Adoretus ursus, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 365.
Trigonostomum ursus, Ohaus, Deutsche Ent. Zeits. 1912, p. 411.

Fig. 63.—*Trigonostomum ursus*, ♂.

Yellowish, with the inner and outer margins of the elytra rather darker, and the head and pronotum dark brown, suffused with a metallic lustre.

Elongate in shape and somewhat shining, but clothed with rather coarse greyish setæ, which are dense upon the scutellum and moderately close upon the sides and ends of the elytra and the pygidium, but elsewhere rather scanty. The elytra bear also a few longer erect hairs placed far apart upon the costæ. The head is not large, but the eyes are prominent, the clypeus rugose, with the margin semicircular and very strongly reflexed, and the forehead very coarsely punctured. The pronotum is very shining, very strongly punctured,

with the lateral margins rounded, the front angles acute and the hind angles obtuse. The elytra are rather closely punctured, with the costæ indicated by indistinct double lines of punctures. The pygidium and the sides of the metasternum are clothed with long hair. The front tibia is armed with two short sharp teeth placed rather close together and a third feeble one above them; the claws are very unequal, the longer one of the front and middle feet minutely cleft, and the shorter one on the hind foot less than half the length of the longer. The antenna is 10-jointed and all the joints except the seventh are elongate.

The female is unknown.

Length, 12–13 mm.; breadth, 5·5–6·5 mm.

Ceylon: Hakgala (*E. E. Green*, March, April).

Type in the British Museum.

This species has a remarkable superficial resemblance to *Adoretus duplicatus*.

Genus RHAMPHADORETUS.

Rhamphadoretus, Ohaus, Deutsche Ent. Zeits. 1912, p. 418.

Type, *Adoretus minutulus*, Brenske (E. Africa).

Range. India, Ceylon, E. Africa.

Small and rather convex, with the clypeus rounded and the eyes moderately large. Labrum short and triangular at its anterior face, not serrated at the sides, the median process not very long, but acute at the apex. Mandibles well-developed, blunt, rounded at the apex and separated by the labrum. Maxilla armed with two sharp teeth and one longer blunt one lying between the two; palpi long and slender. Mentum broad, angulate or minutely emarginate at the middle of the front margin; palpi very short. Antennæ 10-jointed. Front tibia strongly tridentate. Claws very unequal, the longer one of the front and middle feet minutely cleft at the apex.

♂. The eyes are larger and more prominent than in the female.

A species, *R. ehrenbergi*, has been described by Dr. Ohaus from Arabia, which might be supposed to form the link between the Indian and African species of *Rhamphadoretus*, but it is really a quite different insect, which must be eventually placed in another genus. The two Indian species differ from the more numerous African forms in the shape of the maxilla, which in the latter bears four nearly equal sharp teeth, whereas in *R. sorex* and *suillus* there are two short sharp teeth and a longer blunt lobe arising between and behind them, and appearing as if separately articulated.

This genus is extremely close to *Trigonostomum*, but the form is rather more short and compact, and the labrum is devoid of teeth at the edges.

Key to the Species.

Dark, closely pubescent, not shining .... *sorex*, Oh.
Light, shining, very sparsely setose.................. *suillus*, sp. n.

311. **Rhamphadoretus sorex.**

Rhamphadoretus sorex, Ohaus, Deutsche Ent. Zeits. 1912, p. 424.

"Blackish brown, with the femora yellow.

"Rather narrow and convex. Clypeus semicircular, finely margined, closely and finely granulated, opaque; clypeal suture scarcely visible, straight. Forehead granulated and opaque in front, more sparsely punctured behind, like the vertex, and clothed with greyish yellow hair. Pronotum closely and finely punctured, with a greyish yellow hair in each puncture. Scutellum and elytra closely and rugosely punctured and setose, with the hairs rather longer near the extremities and with only slight vestiges of smooth costæ traceable here and there. Pygidium rather convex, moderately evenly punctured and shortly hairy. Claws rather short, those of the front and middle feet not very unequal, the inner hind claw very small and slender.

"The female is unknown.

"*Length*, 7 mm.; breadth, 3 mm.

"CEYLON."

Type in the Berlin Museum; co-type in Dr. Ohaus' collection.

I have not seen this species.

312. **Rhamphadoretus suillus**, sp. nov.

Testaceous yellow, with the forehead, the pronotum (except the sides), scutellum, sutural edges of the elytra, and the tarsi brown or reddish.

It is ovate, not very elongate, convex, smooth and shining, the upper surface coarsely and not closely punctured, with extremely minute, very sparse, inconspicuous pale setæ. The head is finely and not closely transversely strigose, the clypeus semicircular, with its margin strongly reflexed. The pronotum is convex, coarsely and irregularly punctured, with the sides evenly rounded, the front angles almost right angles and the hind angles very obtuse. The elytra are also rather coarsely and not closely punctured and bear three slightly elevated costæ; the scattered setæ are a little closer together near the margins. The pygidium is clothed, like the lower surface of the body, with rather longer and closer hairs. The front tibia is armed with three strong and sharp teeth.

Fig. 64.—*Rhamphadoretus suillus*, ♂.

♂. The eyes are very large and the clypeus small. The longer claw of the front and middle feet is extremely minutely cleft above the tip.

♀. The head is much smaller, and the tarsi are much shorter,

than in the male. The longer claw of the front and middle feet is widely cleft at the tip.

Length, 6·5–9 mm.; breadth, 3–5 mm.

BENGAL: Pusa, Chapra (June to Oct.).

Type in the British Museum.

Genus SCAPHORRHINADORETUS.

Scaphorrhinadoretus, Ohaus, Deutsche Ent. Zeits. 1912, p. 426.

TYPE, *Scaphorrhinadoretus bimaculatus*, Ohaus.

Range. S. India, Andaman Islands.

Form broadly elongate and depressed. Clypeus semicircular, with broad reflexed margin and strongly carinate suture. Eyes prominent, moderately large. Labrum (fig. 59 *c*) short, with a strongly developed, curved median process, acuminate at the apex, broad and flat at the base, its broadest part a little beyond the point of origin and its lateral margins a little raised. Mandibles not meeting, strongly developed, not toothed, the apical part bent at a right angle. Maxilla 3-dentate, the innermost tooth small and sharp; palpi long and slender. Labium short, notched in the middle. Antenna 10-jointed, with the club long in the male. Legs moderately long, the front tibia strongly tridentate, the apical tooth long and remote from the others, the uppermost tooth very small, but separated by a deep notch from the second. Claws very unequal, longer claw of front and middle feet deeply cleft.

♂. The cleft front and middle claws have the inner branch much shorter than the outer.

Only a single species has been described. The unique specimen from the Andaman Is. noticed by Ohaus in the Copenhagen Museum probably represents a second.

313. Scaphorrhinadoretus bimaculatus.

Scaphorrhinadoretus bimaculatus, Ohaus,* l. c. p. 509.

Pale testaceous, shining, with the vertex of the head and the extreme margins of the clypeus, prothorax and elytra dark brown, and a large patch on each side of the pronotum, and sometimes the dorsal part of the elytra, reddish chestnut. The legs and lower surface are pale. The upper surface is very thinly clothed with minute white setæ, arranged in longitudinal rows upon the elytra. The pygidium is clothed with longer, erect but not thick hair, and the lower surface is almost naked.

The clypeus and forehead are rather coarsely and rugosely punctured. The pronotum is short, rather convex, with deep, thinly but uniformly distributed punctures; the lateral margins are strongly and regularly rounded, and the hind angles are scarcely traceable. The scutellum bears a few indistinct punctures, and the elytra are coarsely and moderately closely punctured,

with the primary costæ fairly well marked, but not elevated. The pygidium is rather finely and closely punctured, and the metasternum scantily.

♂. The club of the antenna is very long.

♀. Broader and more oval in shape; the eyes are smaller and less prominent, and the front tibia is shorter and broader, with stronger teeth.

Length, 8 mm.; breadth, 4 mm.

MADRAS: Madura, Trichinopoli, Pondicherry, Madras.

Type in Dr. Ohaus' collection; co-type in the British Museum.

Genus **LISSADORETUS**.

TYPE, *Lissadoretus pallidus*, sp. nov.

Range. Punjab.

Body rather parallel-sided but not long, with the upper surface shining and clothed only with minute and scanty, hardly perceptible hairs, the lower surface rather more closely hairy. Head rather broad, but with the eyes far apart and not large in proportion. Clypeus broad and subrectangular, the margin rounded, but not uniformly, with an indication of front angles. Labrum with a broad, flat, smooth and shining process, overlapping the mentum at the end, where it is rounded and not truncate. Mentum very broad, with the front edge strongly chitinised and bluntly bidentate on each side, broadly emarginate in the middle; the palpi placed far apart. Maxilla armed with three short terminal teeth bent at right angles; palpus short, with a large pear-shaped terminal joint. Mandible strong, blunt and rounded at the extremity. Antenna 10-jointed, but the seventh joint almost invisible. Prosternal process short and rounded. Legs fairly slender; front tibia armed with three strong teeth, hind tibia broadest at the extremity.

♂. More elongate, with the eyes larger and more prominent, the antennæ rather long, and the longer front and middle claws minutely cleft.

♀. Broad and convex, with the eyes not at all prominent, the antennæ short and all the claws simple.

This genus has a distinctive appearance due especially to the remoteness of the eyes, which are rather small relatively to the width of the head. The process of the labrum has also a peculiar form, being quite smooth, flat and shining, without any teeth at the margins and rounded at the end. Another unique peculiarity is found in the claws, which are all undivided in the female only.

314. **Lissadoretus pallidus**, sp. nov.

Pale yellow, with the tarsi and the extreme edges of the head, pronotum and elytra brown.

The body is rather smooth and shining, only clothed on its upper surface with very scanty and inconspicuous minute white

setæ, which are a little closer and longer upon the pygidium and lower surface. It is rather parallel-sided and moderately convex. The head is rugulose, the clypeus broad, with a strongly reflexed margin. The pronotum is short and broad, much broader than the head across the eyes, with deep, rather scattered punctures, the lateral margins strongly rounded, the hind angles scarcely traceable. The scutellum bears a few punctures, and the elytra are rather strongly but not rugulosely punctured, with distinct double lines of punctures. The pygidium is clothed with very fine, moderately close hair. The front tibia is armed with three very strong teeth.

Fig. 65.—*Lissadoretus pallidus*, ♂.

♂. The pygidium is rather closely clothed, but the apical part is devoid of hair and has a rounded elevation in the middle. The front angles of the prothorax are very obtuse. The reflexed margin of the clypeus has a very slight, and sometimes imperceptible, notch in the middle.

♀. The pronotum is very broad and its front angles are slightly acute. The pygidium is less thickly clothed, with a bare median line.

Length, 9–10 mm.; breadth, 4·5–5·5 mm.

PUNJAB: Taru, Peshawar Distr. (*T. Bainbrigge Fletcher*, May), Lahore (July), Khanewah (*T. B. Fletcher*, Aug.).

Type in the British Museum.

This insect appears to resemble *Pseudadoretus* (subg. *Epadoretus*) *reitteri*, Sem., a smaller species from Turkestan, but the structural differences are important.

Genus **PSEUDADORETUS**.

Pseudadoretus, Semenov, Horæ Soc. Ent. Ross. xxiv, 1890, p. 202; Reitter, Verh. Nat. Ver. Brünn, xli, 1903, p. 33.

TYPE, *Pseudadoretus dilutellus*, Sem.

Range. Western Asia.

Ovate, rather compact and convex, and almost without hairy clothing. Integument very thin and uniformly pale in colour, with the eyes and mouth-parts alone dark. Head large, with the eyes very prominent and the clypeus uniformly rounded. Pronotum very small, narrower than the elytra at the shoulders. Elytra smooth, shining and semitransparent. Front and middle legs with fringes of long hairs; the front tibia armed with three sharp teeth, the middle tibia rather slender, the hind tibia dilating regularly from base to extremity, where it is very broad; tarsi moderately slender, with all the claws simple, slender and very unequal. Labrum strongly serrated on each side of its posterior part and produced anteriorly into a very smooth, flat and broad process, dilated at the base and before the extremity and without

teeth at the edges. Maxilla short, broad at the end, where it is armed with three very strong short blunt teeth; palpus clubbed, the last joint very large and ovate. Mentum broad, broadly emarginate at the front margin, with the palpi placed far apart. Mandibles completely separated by the process of the labrum.

♂. The eyes are rather larger and more prominent than those of the female, the pygidium is large and exposed, and the abdomen flat. The antennæ are 10-jointed.

♀. The pygidium is small and almost covered, and the abdomen very convex. The antennæ are 9-jointed.

The many peculiarities of *Pseudadoretus* show an evident specialisation for existence in desert country. From the almost complete loss of the hairy clothing and the dilated hind tibiæ it may be assumed that it has acquired unusual burrowing powers. As characterised by Reitter, *Pseudadoretus* is a composite genus, not sufficiently distinguished from *Adoretus*.

315. Pseudadoretus dilutellus.

Pseudadoretus dilutellus, Sem., Horæ Soc. Ent. Ross. xxiv, 1890, p. 203.

Very pale semitransparent testaceous yellow, with the eyes and mouth-parts alone dark, the body smooth and shining, the head and pronotum clothed with minute and inconspicuous erect setæ.

It is moderately short and convex in shape. The clypeus is prominent, not broad, evenly rounded, and densely and rugosely punctured, the forehead rather more coarsely. The pronotum is feebly punctured in the middle and rather more strongly towards the sides, longest in the middle, becoming very short at the sides, which are strongly rounded, with the front angles right angles and the hind angles quite obsolete. The elytra are a little wider at the shoulders than the pronotum and gently dilate to beyond the middle; they are minutely, irregularly and not closely punctured, the double rows representing the primary costæ being scarcely traceable.

♂. The pygidium is vertical, smooth and shining, with a tuft of erect hairs at the middle of the base.

♀. The pygidium is very short and almost entirely hidden by the elytra.

Length, 7–9 mm.; breadth, 3·5–4·5 mm.

BALUCHISTAN; BOKHARA.

Type in M. Semenov's collection.

Genus ADORETUS.

Adoretus, Cast., Hist. Nat. Ins. ii, 1840, p. 142: Burm., Handb. Ent. iv, 1, 1844, p. 467; Lacord., Gen. Col. iii, 1856, p. 381.
Lepadoretus, Reitt., Verh. Nat. Ver. Brünn, xli, 1903, p. 30.
Prionadoretus, Ohaus, Deutsche Ent. Zeits. 1914, p. 512.
Subg. *Chætadoretus*, Ohaus, l. c. p. 471.

Type, *Adoretus hirtellus*, Cast. (Tropical Africa).

Range. S.E. Europe, Asia, Africa and Madagascar.

Variable in form, but generally elongate and rather depressed. Clothed above and beneath with short hairs, setæ or scales, which may be dense, scattered or aggregated into numerous small patches, and sometimes interspersed with a few longer erect hairs. Head very variable in size, sometimes very broad, with large and prominent eyes. Clypeus large or small, generally more or less semicircular, occasionally slightly emarginate in the middle. Labrum vertical and produced in the middle as a long incurved rostrum, truncated at the end, where it meets the mentum, and finely serrated on each side. Mandibles short and stout, separated by the rostrum, each having a large basal molar and a broad rounded external ramus. Maxilla short and stout, with a strongly chitinised lobe provided with about four very strong short teeth set obliquely; the palpi rather long. Mentum short and broad, deeply emarginate at the middle of the anterior edge and deeply constricted at the sides for the insertion of the palpi. Antennæ normally 10-jointed, in a few species 9-jointed. Pronotum short and scutellum small. Prosternum sometimes forming a well-elevated vertical process behind the front coxæ. Elytra closely, not serially punctured, with more or less visible narrow sutural, lateral and three discoidal costæ; apical angles generally rounded off. The uniformity in the sculpture of the elytra is a rather characteristic feature. In certain species there is a peculiar smooth opaque lateral border (epipleura), due to the enlargement of the usually narrow reflexed part of the elytron, which in most species is only conspicuous near the shoulder. When dilated in this way (as in *A. renardi*, *epipleuralis*, etc.) the epipleura has always a very different texture from the remainder of the surface, from which it is separated by a very sharp carina.

The pygidium is generally clothed with erect hairs, which are short at the base and become gradually longer towards the most prominent part, sometimes forming a distinct tuft. The sides of the abdomen are generally evenly rounded, but in a certain number of the species there is a special modification which appears to have the object of securing an extra close contact between the outer edges of the elytra and the body beneath. A sharp continuous ledge runs along each side on the line corresponding with the lateral margin of the elytron, and the posterior edge of the penultimate dorsal segment is similarly elevated. But this posterior ledge does not follow the line of the margin of the segment to the side, where it meets the lateral margin at an angle, but cutting across the angle curves forward to meet the lateral carina. In the small triangle so cut off on each side of the propygidium lies the last spiracle, which thus has the appearance of lying outside the segment to which it belongs. In a few species (e. g. *Adoretus bicaudatus*, *vitticauda* and *nephriticus*) the spiracle is not outside the short connecting ridge, but stands actually in it. If the presence or absence of this abdominal

ridge is not easily visible, it may be readily made so by slightly raising at its extremity the elytron through which the specimen is not pinned. This peculiar structure, which is found in all those species just mentioned as having smooth opaque epipleuræ to the elytra, as well as in certain others, is evidently of some importance in relation to the habits of the species. Obviously it may be useful for insects which habitually conceal themselves underground to possess a special means of excluding earthy particles from the cavity containing the wings and most of the spiracles, but we do not at present know of any particular in which those *Adoreti* not possessing this feature differ in habits from those possessing it.

The front tibia bears three external teeth and is sometimes finely serrated above them. The tarsi are generally moderately slender, but the hind ones may be short and compact. The claws are very unequal, the inner front and outer middle and hind ones very long, and the first and second cleft at the tip. In the male the cleft is generally very minute, at a little distance from the apex, and sometimes not very easily seen. In *Adoretus minutus*, Brenske, the longer claw of all the feet is cleft, and in the four anterior feet the cleft is very conspicuous and the inner branch of the claw rather dilated. In *A. nasalis*, Arrow, and species allied to it, the claws are not cleft.

In the male *Adoretus* the pygidium is moderately large and exposed, and the abdomen is flat or a little hollowed beneath. In the female the pygidium is much shorter, while the last ventral segment is correspondingly large, and the terminal part of the abdomen is very convex beneath. The eyes are generally larger in the male than in the female and the clypeus smaller, and in some species (as in *A. versutus*, Har.) the difference so produced between the two sexes is very marked.

Certain of the Indian species included here in the genus *Adoretus* have been separated by Reitter and Ohaus under the names *Lepadoretus*, *Chætadoretus* and *Prionadoretus*. *Lepadoretus* is distinguished only by the clothing consisting of scales instead of hairs or setæ, and *Chætadoretus* by the occurrence of a few longer erect hairs placed singly amongst those on the elytra. The difference between hairs and scales is quite indefinite, and the scattered erect setæ make their appearance by such imperceptible degrees that they seem to me equally unsuited to provide a line of demarcation. *Prionadoretus* is characterised by the edges of the produced labrum being deeply, instead of slightly, indented; but this again is found in different degrees of development, and Ohaus has not mentioned that one of the commonest Indian *Adoreti*, *A. limbatus*, Bl., has the labrum of the *Prionadoretus* type. A more important feature of that species in my opinion is the reduction in the number of joints to the antenna. Another new species, *A. nasalis*, closely related to the typical *Prionadoretus*, has all the claws simple and the labrum bears a very peculiar crest, unlike anything known elsewhere. For the

present I prefer, instead of making yet more genera, to retain all these forms in the great genus *Adoretus*.

The very numerous species of *Adoretus* are almost all dull-coloured inconspicuous insects. With few exceptions they appear to be nocturnal in their habits, emerging at night to feed upon foliage. Several of the common Indian species have been found in considerable numbers feeding upon roses, cannas, vines, mangoes, and other cultivated plants, while their larvæ have been found in the soil at the roots of these and other plants, and the adults also conceal themselves beneath the surface soil during the day. They are therefore not often seen, in spite of their abundance, except when attracted into houses by light.

Key to the Species.

1 (6) Clypeus with several lobes in front.
2 (3) Hind legs very short and thick; elytral clothing close and speckled . *coronatus*, Burm., [p. 302.
3 (2) Hind legs moderately long; elytral clothing thin and uniform. [p. 303.
4 (5) Elytral setæ in longitudinal lines.... *seriesetosus*, sp. n.,
5 (4) Elytral setæ scattered.............. *lobiceps*, sp. n., p. 303.
6 (1) Clypeus not lobed.
7 (8) Clypeus deeply excised in front (♀ unknown)...................... *excisus*, Oh., p. 304.
8 (7) Clypeal margin simply rounded (very feebly sinuated in a few males only).
9 (12) Antennæ 9-jointed.
10 (11) Dark, not striped; closely hairy .... *minutus*, Brens., p. 305.
11 (10) Pale, with dark stripes; very thinly setose.......................... *limbatus*, Bl., p. 305.
12 (9) Antennæ 10-jointed.
13 (20) Scutellum very densely clothed with white setæ.
14 (15) Clothing dense, scaly at the sides .... *ermineus*, Arr., p. 306.
15 (14) Clothing not dense or scaly.
16 (19) Elytral setæ not forming clusters.
17 (18) Setæ short above.................. *leo*, Arr., p. 307.
18 (17) Setæ long above .... *duplicatus*, sp. n., p. 308.
19 (16) Elytral setæ forming clusters........ *maris*, Arr., p. 309.
20 (13) Scutellum not more densely setose than elytra.
21 (32) Elytra having small alternating patches of more densely and more sparsely aggregated setæ.
22 (31) Apical calli of the elytra tufted.
23 (24) Outer edge of the front tibia serrated above the teeth (larger species) .... *bombinator*, Burm., [p. 310.
24 (23) Outer edge of the front tibia not serrated above (small species).
25 (26) Pygidium with two very dense and prominent hair-tufts.............. *bicaudatus*, Arr., p. 310.
26 (25) Pygidium without paired hair-tufts.
27 (30) Pronotum not very short. [p. 311.
28 (29) Clypeus rather large .... *compressus*, Wied.,
29 (28) Clypeus rather small .... *vitticauda*, Arr., p. 312.

30 (27) Pronotum very short .... *areatus*, Oh., p. 312.
31 (22) Apical calli not tufted .... *birmanus*, Arr., p. 313.
32 (21) Elytra without denser aggregations of setæ.
33 (50) Outer edge of the front tibia serrated in its basal part.
34 (45) Two upper teeth of the front tibia not divided by an acute notch.
35 (38) Elytra without prominent tufted apical calli.
36 (37) Clypeus small .... *lacustris*, sp. n., p. 314.
37 (36) Clypeus large .... *flavus*, sp. n., p. 315.
38 (35) Apical calli of elytra prominent and tufted.
39 (40) Clypeus very broad .... *boops*, Wied., p. 316.
40 (39) Clypeus not very broad.
41 (42) Upper surface clothed with close-lying setæ .... *fraterculus*, sp. n., [p. 316.
42 (41) Upper surface rather thinly clothed with minute scales.
43 (44) Large species; without prominent costæ upon the elytra .... *gemmifer*, sp. n., p. 317.
44 (43) Small species; with prominent elytral costæ .... *costopilosus*, Oh., p. 318.
45 (34) Two upper teeth of the front tibia divided by an acute notch.
46 (47) Clothing of the upper surface not very sparse .... *serratipes*, Arr., p. 319.
47 (46) Clothing of the upper surface very sparse.
48 (49) Longer claw of the front and middle feet cleft .... *testaceus*, Hope, p. 320.
49 (48) All the claws simple .... *nasalis*, sp. n., p. 320.
50 (33) Outer edge of the front tibia not serrated in its basal part.
51 (58) Two upper teeth of the front tibia divided by an acute notch.
52 (53) Body very elongate and depressed .. *lemniscus*, Arr., p. 321.
53 (52) Body short and stout.
54 (55) Ventral segments tuberculate in the middle .... *cclogaster*, Arr., p. 322.
55 (54) Ventral segments not tuberculate.
56 (57) Punctures of pronotum fine, setæ minute .... *corpulentus*, Arr., p. 323.
57 (56) Punctures of pronotum larger, setæ longer .... *tener*, Arr., p. 323.
58 (51) Two upper teeth of the front tibia not divided by an acute notch.
59 (84) Abdomen with a continuous carina coinciding with the outer margins of the elytra.
60 (71) Elytra with wide opaque epipleuræ.
61 (64) Pronotum shining, rather coarsely and not densely punctured.
62 (63) Front angles of the pronotum not produced .... *renardi*, Brens., p. 324.
63 (62) Front angles of the pronotum acutely produced .... *epipleuralis*, Arr., [p. 325.

64 (61) Pronotum densely punctured, not shining.
65 (70) Elytra without a dark sutural stripe.
66 (69) Forehead rugose.
67 (68) Sutural angles of the elytra rounded *ariel*, sp. n., p. 326.
68 (67) Sutural angles of the elytra sharp. . *victoriæ*, Arr., p. 326.
69 (66) Forehead distinctly punctured .... *vulpeculus*, sp. n., p. 327.
70 (65) Elytra with a dark sutural stripe . . *pleuralis*, Oh., p. 328.
71 (60) Elytra without wide opaque epipleuræ.
72 (73) Elytral epipleuræ moderately wide, but not opaque .... *bimarginatus*, Oh., [p. 328.
73 (72) Elytra without continuous epipleuræ.
74 (81) Body densely clothed above.
75 (80) Rather depressed; uniformly coloured above.
76 (77) Very pale; clypeus large .... *simplex*, Sharp, p. 329.
77 (76) Not very pale; clypeus small.
78 (79) Rather large (♂, clypeus semicircular) .... *singhalensis*, Oh., p. 330.
79 (78) Rather small (♂, clypeus gently emarginate in front)............ *nephriticus*, Oh., p. 330.
80 (75) Convex; margins pale .... *affinis*, sp. n., p. 331.
81 (74) Rather shining and not densely clothed above; setæ very minute.
82 (83) Uniform pale yellow in colour .... *debilis*, sp. n., p. 332.
83 (82) Head and pronotum dark, with paler margins.................. *incurvatus*, Oh., p. 332.
84 (59) Abdomen without a continuous carina coinciding with the outer edges of the elytra.
85 (96) Upper surface shining, very thinly sprinkled with minute setæ.
86 (89) Shape rather long and narrow.
87 (88) Punctures of the pronotum very coarse .... *nitidus*, Arr., p. 333.
88 (87) Punctures of the pronotum not very coarse .... *pallens*, Bl., p. 334.
89 (86) Not long and narrow.
90 (93) Elytra without a dark sutural stripe.
91 (92) Clypeus very small; eyes very prominent .... *lithobius*, Oh., p. 335.
92 (91) Clypeus and eyes moderate ...... *ladakanus*, Oh., p. 335.
93 (90) Elytra with a broad dark sutural stripe.
94 (95) Front angles of the pronotum produced .... *stoliczkæ*, Oh., p. 336.
95 (94) Front angles of the pronotum not produced...................... *kanarensis*, sp. n., [p. 337.
96 (85) Closely clothed and not shining above.
97 (120) Colour uniform above (rather dark).
98 (99) Elytra coarsely rugose, not punctured .... *rugosus*, Arr., p. 337.
99 (98) Elytra punctured.
100 (101) Head and eyes small .... *ovalis*, Bl., p. 338.
101 (100) Head and eyes not small.

102	(111)	Clothing of the elytra interspersed with a few long erect hairs.	
103	(106)	Pronotum closely and confluently punctured.	
104	(105)	Legs very pale; shorter hind claw minute	*sorex*, sp. n., p. 339.
105	(104)	Legs not very pale; shorter hind claw of moderate length	*cribratus*, White, p. 339.
106	(103)	Pronotum distinctly, not confluently, punctured.	
107	(110)	Pygidium clothed with long hair.	
108	(109)	Femora and tibiæ dark	*lasius*, Oh., p. 340.
109	(108)	Femora and tibiæ pale	*posticalis*, sp. n., p. 340.
110	(107)	Pygidium clothed with moderately short hair	*furcifer*, Oh., p. 341.
111	(102)	Elytra without long erect hairs interspersed.	
112	(117)	Pronotum distinctly punctured.	
113	(116)	Elytral clothing dense; apical calli not tufted.	
114	(115)	Pronotum not densely punctured, hind angles distinct	*andrewesi*, Oh., p. 342.
115	(114)	Pronotum densely punctured, hind angles obliterated	*plebejus*, sp. n., p. 342.
116	(113)	Elytral clothing not dense; apical calli bearing minute white tufts ..	*duvauceli*, Bl., p. 343.
117	(112)	Pronotum microscopically rugulose or granular.	
118	(119)	Shorter hind claw more than half as long as the longer one	*horticola*, sp. n., p. 344.
119	(118)	Shorter hind claw less than half as long as the longer one	*punjabensis*, sp. n., [p. 344.
120	(97)	Upper surface not uniformly dark-coloured.	
121	(124)	Rather depressed, long and narrow.	
122	(123)	Very small, with rather coarse pubescence....................	*mus*, Arr., p. 345.
123	(122)	Larger, with fine pubescence......	*distinguendus*, Arr., [p. 345.
124	(121)	Oval and convex.	
125	(128)	Bright yellow, with the head red.	
126	(127)	Broadly oval.....................	*erythrocephalus*, F., [p. 346.
127	(126)	More cylindrical	*bicolor*, Brens., p. 347.
128	(125)	Not bright yellow.	
129	(132)	Pale, with a well-defined dark sutural stripe.	
130	(131)	Pronotum densely punctured......	*decanus*, Oh., p. 347.
131	(130)	Pronotum moderately closely punctured	*suturalis*, Arr., p. 348.
132	(129)	Without a well-defined sutural stripe.	
133	(136)	Pronotum rather coarsely punctured.	
134	(135)	Pronotum less closely punctured at the sides than in the middle	*lasiopygus*, Burm., [p. 349.
135	(134)	Pronotum less closely punctured in the middle than at the sides	*versutus*, Har., p. 350.
136	(133)	Pronotum finely punctured.	
137	(140)	Head relatively large; pronotum very short.	

138 (139) Colour dark, with lighter sides .... *latirostris*, Oh., p. 352.
139 (138) Colour red, with pale testaceous elytra .... *infans*, Arr., p. 352.
140 (137) Head and pronotum moderate.
141 (146) Upper surface not opaque.
142 (143) Hind angles of the pronotum completely obliterated.............. *feminalis*, Arr., p. 353.
143 (142) Hind angles of the pronotum not completely obliterated.
144 (145) Punctures of the pronotum separate, small and regular .... *bengalensis*, Brens., [p. 353.
145 (144) Punctures of the pronotum rather larger and more confused ...... *pusillus*, sp. n., p. 354.
146 (141) Upper surface opaque, sculpture extremely fine and dense.
147 (148) Pronotum densely punctured ...... *fusciceps*, sp. n., p. 355.
148 (147) Pronotum finely granulated ...... *caliginosus*, Burm., [p. 355.

The following five species, which are unknown to me, are not included in the preceding tabulation, but translations of the original descriptions are appended at the end :—

Adoretus brachypygus, Burm., *A. progrediens*, Ohaus, *A. silonicus*, Ohaus, *A. gymnotopus*, Ohaus, *A. nietneri*, Ohaus.

Adoretus maniculus, *polyacanthus*, and *peregrinus*, Ohaus, described in the same treatise as those last mentioned, and said to inhabit the East Indies, are omitted on account of the uncertain significance of that expression.

316. Adoretus coronatus.

Adoretus coronatus, Burm., Handb. Ent. iv. 2, 1855, p. 533.

Uniform dark brown, clothed with yellowish setæ, interspersed with a few longer erect ones, which also form tufts upon the very prominent apical calli, before and behind which there are denuded patches.

It is very long, narrow and parallel-sided. The head is granulated ; the eyes are large and prominent ; the clypeus has rather parallel sides and a strongly reflexed margin, which is gently notched in the middle and rather prominent on each side of the notch. The pronotum is rather uneven, strongly and very closely punctured, with its sides nearly straight and parallel in front, the front angles acute and the hind angles rounded away. The scutellum and elytra are strongly and closely punctured, and the costæ very indistinct ; the apical calli are transverse and very prominent. The front tibia is distinctly serrated in its upper part and near the extremity bears four small sharp teeth, the third smaller than the other three, and rather remote from the second but very close to the fourth, from which it is separated by an

Fig. 66.—*Adoretus coronatus*. ♂.

acute notch. The antennæ are 10-jointed and the first to the sixth joints are elongate. The longer claw of the front and middle feet is cleft, and the shorter claw of the hind foot is minute (less than half as long as the longer one). The hind tibia is rather inflated and the hind tarsus rather short and thick.

I have not seen a female.

Length, 8–10 mm.; breadth, 3·5–4·5 mm.

BURMA: Tharrawaddy (*G. Q. Corbett*), Teinzo (*L. Fea*, May), Victoria Point (*E. T. Atkinson*, Aug.); ASSAM: Sylhet.

Type in the Halle Museum.

317. **Adoretus seriesetosus**, sp. nov.

Leaden-black in colour, with the legs and lower surface tinged with red, and moderately closely clothed above and beneath with short white setæ, of which those upon the elytra are arranged in longitudinal lines.

It is moderately elongate and depressed in form, and slightly shining. The head is broad, with large and prominent eyes, and the clypeus broadly transverse, with the margin strongly elevated and produced into two rounded lobes in the middle; the whole surface of the head is sculptured, but not very closely, with transverse crescent-shaped impressions. The pronotum is coarsely and not closely punctured, the punctures closer and slightly confluent at the sides; the latter are strongly rounded, the front angles acute and the hind angles almost obsolete. The elytra bear rather deeply impressed pairs of striæ, which separate the minute setæ into longitudinal lines; the alternate intervals are rather closely and irregularly pitted. The pygidium is clothed with erect setæ, which form a tuft near the base. The antennæ are 10-jointed. The front tibia is armed with three sharp teeth, the uppermost rather remote from the others and separated by a very acute notch; the shorter claw of the hind foot is more than half the length of the longer.

♂. The pygidium is pointed and without setæ at its apex.

Length, 12–13 mm.; breadth, 6–6·5 mm.

SIND: Karachi (*T. R. D. Bell*).

Type in the British Museum; co-types in Mr. H. E. Andrewes' collection.

This species has a remarkably close resemblance to *Phœadoretus comptus*, Mén. (which inhabits the same region) and can only be distinguished from it by close examination. The head is broader and the eyes larger, more prominent and smoother; the entire sculpture and clothing are extremely similar, but the sides of the pronotum are a little less rugose; in the male, the pygidium is more pointed and smoother at the end.

318. **Adoretus lobiceps**, sp. nov.

Uniform chocolate-brown, rather shining, with a fine, not very close clothing of minute short decumbent setæ, which are longer and closer upon the pygidium and lower surface.

The body is rather long and narrow, the head narrow and the eyes not large. The clypeus is irregularly semicircular, with the margin well reflexed, the sides parallel, slightly contracted at the base, the front margin a little depressed in the middle and gently lobed on each side. The pronotum is strongly and coarsely punctured, the front angles nearly right angles and the hind angles rounded away. The scutellum is finely rugose, and the elytra are strongly and distinctly punctured, with narrow, rather indistinct costæ. The pygidium is finely rugose and closely setose, except at the extremity. The setæ are erect at the end, but there is no hair-tuft. The legs are rather slender, the front tibia armed with three strong teeth equidistant from one another; the longer claw is very minutely cleft on the front and middle feet, and on the hind foot the shorter claw is more than half the length of the longer. The antennæ are 10-jointed, not long, and joints 3–6 are of nearly equal length.

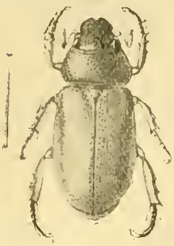

Fig. 67.—*Adoretus lobiceps.*

The sexes are similar, but the abdomen of the male is well arched and that of the female very convex.

Length, 11·5–13 mm.; breadth, 5·5–6 mm.

BOMBAY: Surat (*H. Maxwell Lefroy*); CENTRAL PROVINCES: Jabalpur Distr. (Ind. Mus.), Nagpur (*E. A. D'Abreu*, June).

Type in the British Museum.

Mr. D'Abreu took this upon rose-trees.

319. Adoretus excisus.

Adoretus excisus, Ohaus, Deutsche Ent. Zeits. 1914, p. 486, fig. 19.

♂. "Elongate-oval, rather strongly convex, light red-brown and moderately shining. Head and thorax with slight metallic lustre, clothed with short scattered hairs. Clypeus of the ♂ semicircular, with a strongly reflexed black margin, which is almost semicircularly emarginate in front; the upper surface, as well as the forehead and vertex, rather closely and confluently punctured, the sculpture concealed by the greyish-white decumbent hairs; a transverse bare area upon the vertex behind. Thorax only a little more than twice as broad as long, with its hind margin almost straight, its front margin prominent in the middle, the sides dilated behind the middle, the blunt hind angles slightly rounded, and the rectangular front angles a little produced; the upper surface strongly and often confluently punctured, clothed with short and rather scanty greyish-white hairs, with a bare spot in the middle. Upon the elytra the costæ are only elevated in freshly emerged specimens, but the primary double rows of punctures are regular and the punctures in the intervals mostly arranged in rows, with quite fine transverse wrinkles and microscopically fine

punctulation between them, at least on the disc; from the latter arise the white or greyish-white scale-like hairs; the epipleuræ are narrow and rather short. The pygidium is broad and rather convex, with scattered punctures and sparse short hairs. Legs rather strong; front legs with three sharp teeth, middle and hind tibiæ with two sharp transverse spinose carinæ.

Length, 11–12 mm.; breadth, 5–5·5 mm.

BOMBAY: Khandala, 6,000 ft. (Oct.); CENTRAL INDIA: Nagpur."

Type in Dr. Ohaus' collection.

This species appears to me to be very closely related to *A. nephriticus* Ohaus, although put by Ohaus in a different subgenus.

320. **Adoretus minutus.**

Adoretus minutus, Brenske,* Ann. Soc. Ent. Belg. xxxvii, 1893, p. 140.

Dark chestnut-red, with the head (except the clypeus) and pronotum a shade darker, and the antennæ and legs paler. It is shining and clothed evenly and moderately densely with very fine greyish hairs, which lie fairly close.

It is elongate and narrow, the elytra slightly dilating towards the extremity. The head is relatively large, with strong, coarse and moderately close punctures, and very shining; the clypeus large and semicircular, and the eyes large and prominent. The pronotum is short, coarsely and rather closely punctured, with the sides gently rounded, the front angles not sharp and the hind angles completely rounded off. The scutellum and elytra are closely punctured, the costæ upon the latter not conspicuous; the apical calli are not distinctly elevated. The pygidium is shining, rather thinly and finely punctured, and clothed with moderately long outstanding grey hairs. The antennæ are 9-jointed and slender, the scape moderately long, the second joint large and elongate, the third about as long as the two succeeding, the sixth extremely small. The front tibia is moderately long and armed with three sharp, oblique, rather short teeth, which are somewhat remote, nearly equidistant, and the two uppermost separated by an acute notch; the upper part of the tibia is minutely, not closely, serrated; the longer claw of the hind, as well as the front and middle feet, is cleft.

♂. The longer claws of the front and middle feet are rather deeply cleft, and the lower division dilated.

I have not seen the ♀, and only the ♂ type specimen.

Length, 8·5 mm.; breadth, 4 mm.

BENGAL: Tetara.

Type in Capt. Moser's collection.

321. **Adoretus limbatus.** (Plate I, fig. 11.)

Adoretus limbatus, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 233; Ohaus, Deutsche Ent. Zeits. 1914, p. 491.

Adoretus plagiatus, Burm.,* Handb. Ent. iv, 2, 1855, p. 531.
Adoretus flavovittatus, Nonfr., Berl. Ent. Zeits. 1891, p. 362.
Adoretus castaneus, Nonfr., l. c. p. 363; Ohaus, Deutsche Ent. Zeits. 1914, p. 491.

Deep chocolate-brown, with the lower surface, legs, scutellum and sides of the pronotum and elytra yellow, and a stripe of the same colour extending backwards from the shoulder to beyond the middle of each elytron.

Rather short, broad and nearly parallel-sided, convex above, rather smooth and shining, and only very sparsely clothed with minute setæ. The head is large, with the eyes prominent, but only moderately large, the clypeus semicircular, almost as wide as the head, feebly rugulose and setose, and strongly reflexed at the margin, the forehead moderately punctured and setose. The pronotum is very short, sparingly but strongly punctured, with the sides parallel in front, the front angles acute and the hind angles completely rounded off. The scutellum bears a few punctures, and the elytra are rugosely punctured, with feebly developed costæ, and with minute setæ arranged in longitudinal rows rather remote from one another. The pygidium is coriaceous and very thinly clothed with fine erect hairs. The lower surface is rather more closely but not thickly clothed with greyish hair. The antennæ are slender, 9-jointed, the first joint long, the second globular, the third, fourth and fifth elongate and subequal in length, the sixth very short, and the remaining three forming the club. The front tibiæ are armed with three strong teeth, all the tarsi are slender, and the longer claw of the front and middle feet is cleft; the shorter hind claw is more than half the length of the longer one.

♂. The longer claw of the front and middle feet is only very feebly cleft and the eyes are rather larger than in the female.

Length, 7–9 mm.; breadth, 3·5–4·5 mm.

Bengal: Katihar, Purneah Distr. (*C. A. Paiva*), Calcutta, Chowringhee (*F. H. Gravely*, June), Dacca, Berhampur (*E. T. Atkinson*), Maldah (*Atkinson*); United Provinces: Cawnpore (*C. S. Betton*, July); Burma: Teinzo (*L. Fea*, May), Shenmaga (*L. Fea*, June), Cachin Hills (*H. L. Stanton*), Tharrawaddy and Taung-ngu (*G. Q. Corbett*); Siam (*teste* Nonfried).

Type in the Paris Museum; that of *A. plagiatus* in the Geneva Museum; those of *A. flavovittatus* and *A. castaneus* in Dr. Ohaus' collection.

322. Adoretus ermineus.

Adoretus ermineus, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 588.

Testaceous, thickly clothed above with white or pale yellow scaly decumbent setæ, which become gradually more dense towards the hinder part of the elytra, and are extremely dense upon the scutellum and the outer margins of the elytra. The

pygidium is densely, and the lower surface of the body and the legs are less densely, clothed with fine hair.

It is elongate-ovate and convex, with a close sculpturing of the upper surface, which is almost hidden by the scaly covering. The clypeus is semicircular, the pronotum moderately rounded at the sides, with the front angles nearly right angles and the hind angles obtuse. The elytral costæ are feeble and the epipleuræ not developed. There is a sharp continuous carina along each side of the abdomen, and the hind margin of the propygidium is also sharply elevated and united to the lateral carina by a short ridge on each side which cuts off the last spiracle. The carina thus formed exactly coincides with the outer edges of the elytra. The front tibia bears three not very strong external teeth, the longer claw is minutely cleft in the front and middle feet, and the shorter claw of the hind foot is less than half the length of the other. The antennæ are 10-jointed, joints 3–5 equal, 6 longer.

♂. The clypeus is small, and the eyes very prominent but not very large. The pygidium is clothed with long erect hairs, which converge to form a pointed conical tuft.

♀. The pygidium has a small depression at its apex, and the hairy covering is not long or erect.

Length, 12–14 mm.; breadth, 5·5–7 mm.

CEYLON: Madulsima (*E. E. Green*); Kalupahani, near Haldammulla.

Type in the British Museum.

323. Adoretus leo.

Adoretus leo, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 364.

Chestnut-red with the elytra bright yellow, except the margins, which are rather broadly red externally and very narrowly along the base and suture. The head and prothorax are lightly metallic.

The body is moderately elongate, convex and clothed with decumbent whitish setæ, which are rather scanty above, except on the scutellum, the apical margins of the elytra and the pygidium: there are also a few scattered erect hairs. The clypeus is fairly large, rugose, with the margin semicircular, and the forehead is strongly and closely punctured. The pronotum is moderately short, coarsely and closely punctured, with the sides rounded, the front angles acute and the hind angles obtuse. The scutellum is moderately closely punctured and setose, and the elytra are rather lightly punctured, except at the sides, with slightly indicated double rows of regular punctures. The pygidium is finely punctured; the sides of the metasternum are closely pitted and the middle smooth. There is a sharp continuous carina extending along each side of the abdomen and coinciding with the outer margin of the elytra. The posterior edge of the propygidium is also sharply raised and united

to the abdominal carina by a short ridge which cuts off the angle containing the last spiracle on each side.

♂. The front tibia bears two sharp teeth and a very feeble upper one, and the pygidium is convex, with an almost smooth area at the apex.

♀. The front tibia has three teeth; the pygidium is flattened and slightly emarginate at the apex.

The clypeus scarcely differs in the two sexes.

Length, 12–13 mm.; breadth, 6–7 mm.

CEYLON: Ohiya (*E. E. Green*, Nov.).

Type in the British Museum.

324. **Adoretus duplicatus**, sp. nov. (Plate V, figs. 12 & 13.)

Reddish brown, with the elytra, femora and tibiæ yellowish, the margins of the elytra and the tarsi red-brown, the forehead and more or less of the pronotum dark brown and faintly suffused with a greenish or reddish metallic lustre. The whole surface is clothed with rather long white hairs, which are very dense upon the scutellum and pygidium and rather scanty upon the elytra, except at the lateral and apical margins.

It is elongate-oval, convex and rather shining. The head is small, with the clypeus semicircular, densely rugose, and its anterior margin strongly reflexed; the forehead is strongly punctured. The pronotum is coarsely, sparingly and irregularly punctured, but a little more closely towards the sides, which are rounded, the front angles nearly right angles and the hind angles very obtuse. The elytra are strongly and distinctly punctured, with narrow, well-marked, but scarcely elevated costæ; the clothing is very sparse near the suture, but becomes more abundant towards the sides and apices, and the three or four longitudinal costæ bear rows of longer erect white bristles placed far apart. The prosternum is strongly elevated behind the front coxæ, and the shorter hind claw is much less than half the length of the longer one.

♂. The eyes are very prominent, the clypeus smaller, more finely rugose and closely hairy. The pygidium is long and densely clothed, except at the apex, with long erect hair, which is longest in the middle. The front tibia is armed with three very short but sharp teeth, placed near the extremity; the claws are very unequal, and the longer one of the front and middle feet very minutely cleft at a distance from the apex. The club of the antenna is long.

♀. The body is relatively shorter, more oval and less closely pubescent; the eyes are smaller, the clypeus larger and more coarsely rugose; the teeth of the front tibia are less sharp and more oblique, and the tarsi are shorter, with the longer claw of the front and middle feet cleft at the apex. The pygidium is short and thinly pubescent.

Length, 14 mm.; breadth, 6·5–7 mm.

CEYLON: Pattipola (*E. E. Green*, May).

Type in the British Museum.

I know only one specimen of each sex.

This species reproduces in almost every detail the superficial characters of *Trigonostomum ursus*, Arr., another Ceylonese insect to which it bears so extraordinarily close a resemblance as to preclude the idea of a mere convergence of characters. The form, colouring, clothing and sculpture are identical, but the pygidium of the male is more thickly hairy. The form of the labrum and that of the ædeagus of the male are the only other tangible distinctive characters.

325. Adoretus mavis.

Adoretus mavis, Arrow, Ann. Mag. Nat. Hist. (8) viii, 1911, p. 363.

This is a large rather massive species, moderately closely clothed with decumbent whitish setæ, which are very dense upon the scutellum and form four longitudinal rows of closer agglomerations upon the elytra, which also bear a very few erect scattered hairs. There is a slight metallic lustre upon the anterior part of the body.

The clypeus is semicircular and rugose, and the forehead coarsely punctured. The prothorax is moderately short, strongly and rather closely punctured and at the sides rather rugosely; the lateral margins are continuously rounded, the front angles acute and the hind angles indistinct. The elytra are closely and rather coarsely punctured, with narrow indistinct costæ coinciding with the rows of patches of agglomerated setæ. The pygidium is rugosely, the sides of the metasternum densely, and its middle very sparsely, punctured. There is a continuous sharp carina extending along each side of the abdomen and coinciding with the outer margins of the elytra. The posterior margin of the propygidium is also sharply raised and united to the lateral carinæ by a short ridge which cuts off the last spiracle on each side. The front tibia is rather sharply tridentate.

♂. The eyes are rather larger.

♀. The clypeus is a little longer, and the apex of the abdomen slightly indented beneath.

Length, 13–14 mm.; breadth, 6–7 mm.

CEYLON: Bogawantalawa, 4900–5200 ft. (*G. Lewis*).

Type in the British Museum.

326. Adoretus bombinator.

Adoretus bombinator, Burm., Handb. Ent. iv. 2. 1855, p. 532.

Chestnut-brown, closely clothed above and beneath with closely appressed pale setæ, which become scales on the pronotum and elytra. Those of the latter are not quite evenly distributed'

leaving upon each elytron four or five longitudinal series of small bare spots, between which the scales are rather more closely aggregated. The apical calli are very prominent and bear thick tufts of short white setæ. The scales of the pronotum are rather more closely aggregated at a short distance from the outer margin on each side.

It is a large compact species, ovate and moderately convex, with short stout legs. The head and pronotum are densely granular, the clypeus nearly semicircular, the eyes prominent; the prothorax short, the sides gently rounded, the front angles acute and the hind angles distinct but obtuse. The elytral costæ are moderately distinct, and the intervals closely and finely punctured. The pygidium is conical and bears long outstanding hairs at its apex. The front tibia bears three small very acute teeth, placed close together at the extremity and separated from one another by acute notches. The upper part is finely serrated.

♂. The clypeus is small and the eyes are large.

♀. The clypeus is large and the eyes smaller.

Length, 12·5–15 mm. ; breadth, 6–8 mm.

Burma : Rangoon (*E. T. Atkinson*, March), Tharrawaddy (*G. Q. Corbett*), Theinzeik (*F. Loizeau*) ; Assam (Hope Collection).

Type in the Halle Museum.

327. **Adoretus bicaudatus.** (Plate V, figs. 14 & 15.)

Adoretus bicaudatus, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 587.

Brown, densely clothed with decumbent grey setæ, which form alternate denuded and densely covered patches upon the elytra. The apical protuberances of the latter are prominent and slightly tufted, and there are two strong tubercles upon the pygidium before the extremity, which bear thick tufts of white setæ.

Fig. 68.
Adoretus bicaudatus.

It is small and narrowly elongate, densely and rugosely punctured above and beneath. The head is large, with prominent eyes and broadly semicircular clypeus. The sides of the pronotum are moderately rounded, the front angles slightly acute, and the hind angles very obtuse. The elytral epipleuræ are not developed. The sides of the abdomen are sharply carinate, and the posterior edge of the propygidium is also sharply elevated and united with the lateral carinæ by a short ridge on each side, in which the last spiracle is situated. The continuous carina so formed coincides with the outer edges of the elytra. The legs are rather short, the hind pair very short and thick ; the front tibia is armed with three short teeth, the uppermost further from the second than that is from the first and separated by a rather sharp notch ; the larger claw is minutely cleft in the front and middle feet, and the shorter claw of the hind foot is less than half the length

of the longer one. The antennæ are 10-jointed, joints 4–6 nearly equal in length.

♂. The teeth of the front tibia are very small. The tufts of the pygidium are very prominent, and there is a well-marked, smooth, denuded area between them and the apex.

Length, 8–10 mm.; breadth 3·5–5 mm.

Bengal: Calcutta (*C. E. Preseley*, Oct.), Sunderbans (*F. W. Champion*), Dacca (July); Madras: Berhampur, Ganjam (*E. T. Atkinson*); Ceylon: Trincomali (*E. E. Green*, Sept.); Niroddumunai (*E. E. Green*, May).

Type in the British Museum.

This species was found upon the bark of a mango tree at Dacca.

328. **Adoretus compressus.**

Melolontha compressa, Weber, Observ. Entom., 1801, p. 72.
Adoretus umbrosus, Burm., Handb. Ent. iv, 1, 1844, p. 475; Reitt., Verh. Nat. Ver. Brünn, xli, 1903, p. 30.
Lepadoretus compressus, Ohaus, Ent. Blätt. viii, 1912, p. 224.

Reddish brown, rather deeply clothed with short decumbent scale-like whitish setæ, those beneath rather scanty at the middle of the metasternum and abdomen, those of the elytra with longitudinal lines of more closely aggregated clusters, between which occur minute bare or partly bare areas.

It is moderately elongate, and the legs are rather short. The head and pronotum are very densely and finely granulated, and the former is moderately broad, with a large, nearly semicircular clypeus. The pronotum is not very short or flat, its sides are gently rounded, the front angles nearly right angles and the hind angles almost rounded off. Each elytron bears three fairly well-marked dorsal costæ and a prominent callus in the apical angle, upon which the setæ are closely aggregated; the intervals are shallowly and confluently pitted. The apical part of the pygidium is bare and opaque and surrounded by a close fringe of long erect hairs. The front tibia bears three similar strong teeth, the uppermost one placed farther from the second than that is from the first; the claws are not very unequal, and the longer one is cleft at the tip on the front and middle feet.

♂. The inner lobe of the longer front and middle claws is broad and blunt.

Length, 11 mm.; breadth, 5·5 mm.

Bengal: Kierpur, Purneah District (*C. Paiva*, Sept.); Burma: Papun (*Lieut.-Col. Adamson*), Victoria Point (*E. T. Atkinson*); Tonkin; Cambodia; Malay Peninsula; Sumatra; Java; Borneo; Mauritius.

Dr. Ohaus gives Madras and South Ceylon as localities for this species, but it seems likely that *A. bicaudatus*, Arr., or another of the closely similar forms may have been mistaken for it. It is an essentially Malayan insect, although its presence in Mauritius indicates its capability of extending its range. If accidentally

introduced into fresh regions it is probably capable of becoming a serious pest, as a race or very closely related species (*A. sinicus*) introduced into the Hawaiian Islands has proved very destructive to sugar-cane, its larvæ feeding upon the roots.

329. Adoretus vitticauda.

Adoretus vitticauda, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 595.

Brown, with the upper surface suffused with a slight metallic lustre, and clothed with unevenly distributed decumbent yellowish setæ, forming longitudinal rows of alternately bare and densely setose spots upon the elytra. Across the apical calli there is a transverse series of tufts of still closer and longer setæ, and the pygidium bears three similar tufts in a transverse row far apart.

It is elongate-oval and not very depressed. The head is closely punctured, with a lightly punctured shining area in the middle of the forehead, and the clypeus is small and semicircular; the eyes are large and prominent. The pronotum is strongly and densely but unevenly punctured, with the sides strongly rounded, the front angles nearly right angles and the hind angles very obtuse. The scutellum and elytra are closely punctured, and the costæ of the latter almost obsolete. The extremities of the elytra are dark, opaque, and thinly setose, and the calli are prominent. A sharp keel extends along each side of the abdomen, coinciding with the outer edges of the elytra. The hinder margin of the propygidium is also sharply elevated and united to the abdominal keel on each side by a short ridge in which the last spiracle is situated. The front tibiæ are broad and sharply tridentate, the hind legs extremely short, and the hind tibiæ inflated; the longer claw of the front and middle feet is very minutely cleft at the apex, and the shorter claw of the hind feet is reduced to a minute vestige. The antennæ are 10-jointed, the fourth and fifth joints short, and the third and sixth longer.

♂. The eyes are larger than in the female. The teeth of the front tibiæ are sharply pointed, the first and second separated by an acute notch, the third excessively short.

♀. The teeth of the front tibia are strong and close together.

Length, 9 mm.; breadth, 4·5 mm.

BURMA: Papun (*Col. Adamson*), Palon (*L. Fea*, Sept.); SIAM.

Type in the British Museum.

This is nearly related to *A. compressus*, Wied., but differs in the more conspicuous white tufts at the extremity of the elytra and the pygidium, and also in the toothing of the front tibia, &c.

330. Adoretus areatus.

Adoretus areatus, Ohaus, Deutsche Ent. Zeits. 1914, p. 506, fig. 41.

Ferrugineous red, with the antennæ, femora, and tibiæ a little paler, and clothed rather closely with fine but not very short

white setæ; the apical calli of the elytra prominent, their posterior vertical face smooth and shining and darker in colour, and the setæ situated immediately before the callus on each side aggregated into a cluster of about four dense white patches.

Elongate, rather parallel-sided and depressed. The eyes are large and prominent, the clypeus short, broadly rounded and rather closely granulated, and the forehead densely rugose. The pronotum is short, strongly and densely punctured, with the sides nearly straight in front, rounded behind, the front angles nearly right angles, and the hind angles very obtuse and scarcely traceable. The scutellum is closely punctured, and the elytra are densely punctured, with the costæ well-marked and elevated in front but imperfect behind, the apical calli prominent and a small smooth dark area behind each; there is also a slight elevation with a surrounding depression upon each elytron near the scutellum. The pygidium is clothed with short erect grey hair. The sides of the abdomen are carinated, and the posterior edge of the propygidium is also sharply carinated but not continuous with the lateral carinæ, from which it is divided by the last spiracle on each side. The legs are rather slender, the front tibia armed with three short sharp teeth, the uppermost rather remote from the other two, the hind tibia rather inflated, the longer claw cleft on the front and middle feet, and the shorter hind claw less than half the length of the longer. The antennæ are 10-jointed.

♂. The longer front and middle claws are thickened at the end and only very minutely cleft.

Length, 10 mm.; breadth, 4·5 mm.

? BENGAL; JAVA.

Type in Dr. Ohaus' collection.

A partly denuded male specimen of this species in M. René Oberthür's collection is labelled "India," but a well-preserved specimen in the British Museum (from the Bowring Collection) is labelled "Java." As Dr. Ohaus has apparently no information as to the exact source of his type-specimen, it seems possible that the species may not be really Indian. There is no ground for doubting the accuracy of the locality Java, whence Bowring received many Coleoptera without more precise data.

331. **Adoretus birmanus.** (Plate V, fig. 37.)

Adoretus birmanus, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 596.
Adoretus birmanus, var. *flavescens*, Arrow, l. c.

Dark brown, with the sides of the pronotum, the sternum, femora and tibiæ, and parts of the abdomen yellowish. The elytra are minutely sprinkled with the same colour and the sides generally vaguely paler. It is moderately thickly clothed with decumbent setæ, which are rather unevenly disposed upon the

elytra, leaving very minute bare intervals, and there are a very few longer erect setæ near the sides.

The body is moderately elongate and parallel-sided, and rather depressed, with the head broad, the clypeus semicircular and finely granulated, and the forehead coarsely punctate-rugose. The pronotum is short, coarsely and closely punctured, with the sides rounded, the front angles nearly right angles and the hind angles very obtuse. The scutellum is strongly punctured, the elytra densely and confluently, and the costæ are rather indistinct. The pygidium is finely coriaceous and clothed with rather long erect hair. The antennæ are 10-jointed, joints 3 to 7 regularly decreasing in size. The legs are rather slender, but the hind tarsi a little shortened and thickened; the front tibiæ bear three sharp teeth, the uppermost not reaching the middle, minute and separated by a sharp notch from the preceding one; the longer claw of the front and middle feet is cleft, and the shorter one of the hind foot more than half as long as the other.

♂. The front tibia is much more slender than that of the female and the teeth shorter and sharper, the eyes are larger, the abdomen rather long and distinctly arched, and the pygidium very prominent and convex.

♀. The form is shorter and less parallel-sided, the eyes are smaller, the abdomen is short and very convex, and the pygidium almost concealed.

Length, 11–12·5 mm.; breadth, 5–6 mm.

Burma: Rangoon (*E. T. Atkinson*), Taung-ngu (*G. Q. Corbett*), Palon (*L. Fea*, Aug., Sept.).

A. birmanus, var. **flavescens**, Arrow.

The elytra are yellow, except a vaguely defined dark sutural stripe of varying size, and the clypeus and the middle, as well as the sides, of the pronotum are generally pale also.

The specimens of this variety, of which I have seen a considerable series taken by Comotto at Minhla, are all of rather smaller size than the typical form. It has also been found at Pakokku, Upper Burma, 180 feet (*Miss Molesworth*, Sept., Oct.).

Types of species and variety in the British Museum.

332. **Adoretus lacustris**, sp. nov. (Plate V, fig. 45.)

Pale testaceous, with the clypeus and tarsi reddish, and the forehead, vertex, two indefinite spots at the front margin of the pronotum, the extreme edges of the elytra, and sometimes the abdomen, black.

It is a rather large species, moderately elongate, not very convex, and evenly and rather closely clothed with fine uniform decumbent grey hair. The head is not large, the surface granulated (not very closely) and the clypeus almost semicircular. The pronotum is moderately finely and closely punctured (but less closely in the middle), with the sides strongly rounded,

the front angles acute and the hind angles obtuse. The scutellum is long and finely rugose, except at the apex, which is quite smooth, and the elytra are finely punctured, with the dorsal costæ narrow and a little elevated. The pygidium is very finely and densely coriaceous. The front tibia is armed with three strong sharp teeth, the uppermost a little farther from the second than that is from the first, and slightly serrated above them.

♂. More elongate and parallel-sided, with the eyes very large and prominent, the legs long and slender, the claws very unequal, and the longer one on the front and middle feet very minutely cleft.

♀. More ovate, with the eyes smaller, the legs shorter and all the claws simple.

Length, 11–14 mm.; breadth, 5·5–7·5 mm.

BENGAL: Durgapur, nr. Calcutta.

Type in the British Museum; co-types in the Indian Museum.

This insect was found by Mr. F. H. Gravely close to the water's edge at the Salt Lakes. Larvæ were found at the roots of an aquatic shrub, *Acanthus ilicifolius*, sometimes in very wet mud, and the adults were feeding in great abundance upon the leaves of *Avicenna*. Pupæ and adults were also found in clayey soil a little above the water-level but close to it.

333. **Adoretus flavus**, sp. nov. (Plate V, fig. 16.)

Pale yellow, with the head, the extremities of the tibiæ and the tarsi dark red.

The body is elongate-oval, convex, slightly shining, and clothed, uniformly but not closely, with exceedingly minute white setæ. The head is large and rather finely rugose, with the clypeus large and its front edge very strongly reflexed, especially in the middle. The pronotum is finely punctured, not very closely in the middle, densely and rugosely at the sides; the lateral margins are rounded, the front angles rather acute and the hind angles very obtuse. The scutellum is finely and closely punctured, and the elytra closely and rather finely, but not densely or rugosely, with well-marked but scarcely elevated discoidal costæ; the apical angles are not rounded off. The setæ are rather longer and closer near the posterior edges of the elytra, and the pygidium is moderately closely clothed with very short white hairs. A sharp carina extends along each side of the abdomen and is united by a short ridge, cutting off the last spiracle on each side, to the posterior edge of the propygidium, which is sharply elevated. The continuous ridge so formed coincides with the outer edges of the elytra. The front tibia is armed with three very strong teeth, the uppermost rather farther from the second than that is from the first, and above the teeth the outer edge is coarsely serrated; the hind tibia is short and broad; the longer claw bears a quadrate lamina at the base and is cleft upon the front and middle feet. The

labrum is studded with rather coarse tubercles and rounded (not truncate) at the end.

♂. The hair is erect upon the pygidium, and the longer front and middle claws are almost imperceptibly cleft.

♀. The pronotum is more shining and more sparingly punctured, and the hair of the pygidium is decumbent.

Length, 10–11 mm.; breadth, 4·5–5 mm.

PUNJAB: Taru, Peshawar Distr. (*T. B. Fletcher*, May); W. BENGAL: Dinapur (*N. Annandale*, July).

Type in the British Museum.

334. Adoretus boops.

Melolontha boops, Wied., Germar's Mag. Ent. iv, 1821, p. 135.
Adoretus boops, Burm., Handb. Ent. iv, 1, 1844, p. 474.
Adoretus latifrons, Blanch., Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 232.

Tawny yellow, rather closely clothed above and beneath with uniform decumbent greyish setæ.

It is a large, rather narrow and depressed species, with a very large head and short legs. The clypeus is large and flat, nearly semicircular, but slightly produced in front, and the forehead thickly covered with setæ. The pronotum is short, densely punctured, with the sides very obtusely angulated in the middle, but not distinctly curved, the front angles acute and the hind angles obtuse. The scutellum is well punctured, and the elytra are long and taper slightly from shoulder to apex; they are closely and confluently punctured, with narrow moderately distinct costæ, and the apical calli are very prominent and tufted. The pygidium has a rather thick tuft of outstanding hair near the apex. The prosternum is strongly elevated behind the front coxæ as a nearly vertical finger-like process bearing stiff hairs. The front tibia is armed with three acute but rather small teeth, the middle one nearer to the terminal than to the uppermost one, above which the tibia is slightly serrated, and the longer claw of the front and middle feet is cleft at the tip.

♂. The longer claw of the front and middle feet is exceedingly minutely cleft, and the teeth of the front tibia are more minute than in the female.

Length, 13·5–16 mm.; breadth, 6–7 mm.

ASSAM: Khasi Hills; BENGAL: Dacca, Chapra (*Mackenzie*), Pusa (June); MADRAS: Berhampur (*E. T. Atkinson*).

Type in the Copenhagen Museum; that of *A. latifrons* in the Paris Museum.

Taken at Pusa on Ber (*Zizyphus jujuba*).

335. Adoretus fraterculus, sp. nov. (Plate V, fig. 17.)

Reddish brown, with the elytra, femora and tibiæ pale testaceous; moderately closely clothed above with very short decumbent white setæ, with longer erect setæ scattered upon the posterior part of the elytra and a tuft upon the apical callus.

It is narrowly elongate in form, parallel-sided and rather depressed. The head is finely and rugosely punctured, with the eyes very large and prominent, and the clypeus semicircular and not very large. The pronotum is closely and rather rugosely, but less finely, punctured, with the sides gently rounded, the front angles slightly acute and the hind angles well-marked but obtuse. The elytra are deeply and coarsely punctured, the punctures partly confluent, especially on the middle, and the longitudinal costæ incomplete. The apical part of the pygidium is bare and smooth, but surrounded by long erect hairs. A continuous sharp carina extends along each side of the abdomen, and the posterior margin of the propygidium is also sharply elevated and united to the lateral carinæ by a short ridge on each side, which cuts off the last spiracle. The outer edges of the elytra fit against the ridge thus formed. The antennæ are 10-jointed. The legs are not long, the front tibia armed with three very short and minute but sharp equidistant teeth, with minute and not close serrations above them; the longer front and middle claws are very minutely cleft at the tip, and the shorter hind claw is more than half the length of the longer.

♀ unknown.

Length, 10 mm.; breadth, 4·5 mm.

E. BENGAL: Buxa Duars (*C. F. C. Beeson*, Nov.); ASSAM: Sylhet.

Type in the British Museum.

A specimen was found by Mr. Beeson upon the bark of a sal tree (*Shorea robusta*).

336. **Adoretus gemmifer**, sp. nov.

Uniform chocolate-brown, with the femora and tibiæ a little lighter, and clothed above with very minute white scales, evenly distributed and not in contact, the elytra having a few larger scattered scales in irregular longitudinal rows.

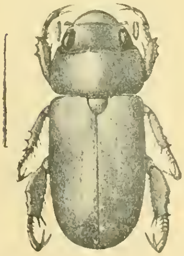

Fig. 69. *Adoretus gemmifer.*

It is a very large species of elongate depressed form, with the upper surface finely and densely granulated and opaque. The head is large, minutely granulated, and rather closely clothed with elongate scales, with the clypeus strongly rounded and minutely produced in the middle of the front margin. The pronotum is finely and densely rugulose, with the sides gently rounded, the front angles rather acute, the hind angles distinct, but obtuse, and the base slightly lobed in the middle. The scutellum is rather shining, but a little rugulose at the base, and the elytra are very finely and closely granulated, without punctures, and with only very inconspicuous narrow costæ, the apical calli being prominent. The pygidium is minutely coriaceous

and opaque, clothed with setose scales in the anterior part and with erect hairs towards the apex. A sharp continuous carina extends along each side of the abdomen, and the posterior edge of the propygidium is also sharply elevated and united to the lateral carinæ by a short ridge which cuts off the last spiracle on each side. The continuous abdominal carina thus formed exactly coincides with the outer edges of the elytra. The legs are stout, the front tibia armed with three very short teeth placed close together, especially the two terminal ones, and the upper part finely serrated; the tarsi rather short, the claws rather unequal, and the longer front and middle claws minutely cleft. The labrum is sharply toothed at the sides and the process is very narrow.

♀ unknown.

Length, 14–15 mm.; breadth, 7 mm.

Bengal: Sunderbans (*Subramania Ayyar*, Oct.).

Type in the Oxford Museum; co-type in the Indian Museum, Calcutta.

Found damaging sundri trees (*Heritiera littoralis*).

337. **Adoretus costopilosus.** (Plate IV, figs. 30, 31 & 32.)

Adoretus costopilosus, Ohaus, Deutsche Ent. Zeits. 1914, p. 506, fig. 42.

Dark brown, with the antennæ, femora and tibiæ generally a little paler, and with the surface above and beneath moderately closely clothed with short decumbent white setæ, but the primary costæ of the elytra smooth and bearing each a double series of larger and sparser setæ. The sutural costa bears only a single series of similar setæ.

It is rather elongate, parallel-sided and depressed, and the whole upper surface is sometimes shining and sometimes rendered semi-opaque by a dense microscopic puncturation. The head is broad, with the clypeus broadly rounded and rugose, and the forehead and vertex coarsely and confluently punctured. The pronotum is more coarsely punctured, with the sides and a median area rugose; the lateral margins are straight in front, the front angles right angles and the hind angles very obtuse. The elytra are coarsely and confluently punctured, with the sutural costa bordered by a deep groove, the discoidal costæ indistinct in front but well marked behind, and the apical calli very prominent and bearing tufts of rather long erect setæ. The pygidium is clothed at the end with not very long erect hairs. The front tibia is armed with three small teeth, the uppermost one rather more remote from the second than that is from the first, and above the teeth the outer edge is minutely serrated; the hind tibia is short and inflated, the longer claw of the front and middle feet is cleft, and the shorter claw of the hind foot is more than half the length of the longer one. The antenna is 10-jointed.

♂. The eyes are larger than those of the female, the clypeus rather smaller, the pronotum more rugosely punctured, and the

pygidium large and convex and clothed with rather long erect hairs.

Length, 10–11 mm.; breadth, 4·5–5 mm.

ANDAMAN IS.; BURMA: Theinzeik (*P. Loizeau*); BENGAL: Chittagong Hill Tracts, Rangamati (*R. Hodgart*, July); SIKKIM: Gopaldhara, Rungbong Valley (*H. Stevens*); UNITED PROVINCES: Dehra Dun (*Butterwick*, Sept.–Oct.); PUNJAB: Kangra Valley, 4500 ft. (*G. C. Dudgeon*, July).

Type in Dr. Ohaus' collection.

This species varies in the degree of smoothness or opacity of its surface, which is sometimes microscopically rugulose or shagreened, but except in this respect I have found no difference between specimens from localities so far apart as the Andaman Islands and the Punjab. Whether this variation is local, I have not seen a sufficient number of specimens to determine; but in the shape of the ædeagus there is remarkable variation, which is almost certainly geographical. I have figured those of three specimens, showing a progression from the slightly-cleft typical form occurring in the Eastern region to a very deeply-cleft form in the Western. Fig. 32 is from an Andaman Island specimen, fig. 31 from one from the Chittagong Hills, and fig. 30 from the United Provinces (Dehra Dun).

338. **Adoretus serratipes.** (Plate V, fig. 18.)

Adoretus serratipes, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 595.

Uniformly dark brown, evenly clothed all over with minute grey setæ, the vertex of the head and the pronotum faintly metallic.

It is moderately elongate, parallel-sided and rather convex. The head is closely rugose, the clypeus large, with its margin semicircular and strongly reflexed. The pronotum is closely but very coarsely punctured, the front angles nearly right angles, and the hind angles almost rounded off. The scutellum and elytra are strongly, densely and confluently punctured, and the costæ of the latter almost obsolete. The front tibiæ are armed with three sharp teeth, the second and third being divided by a sharp notch and more widely separated than the first and second; above the uppermost tooth the outer edge is finely serrated. The longer claw of the front and middle feet is cleft, and the shorter claw of the hind foot is more than half the length of the longer; the hind tarsi are short and thick. The antennæ are 10-jointed, joints 2 to 5 progressively diminishing.

Fig. 70.
Adoretus serratipes.

The sexes scarcely differ superficially, but the eyes are rather larger in the male.

Length, 10·5–12 mm.; breadth, 5–6 mm.

Burma: Rangoon, Shenmaga, Taung-ngu (*L. Fea*), Tharrawaddy, Promé, Paungdé (*G. Q. Corbett*); Assam: Sibsagar (*G. E. Peal*), Siliguri, Cachar (*J. W. Mason*).

Type in the British Museum; co-types in the Genoa Museum, Berlin Entomological Museum, and Mr. H. E. Andrewes' collection.

339. **Adoretus testaceus.** (Plate V, figs. 19 & 20.)

Geniates testaceus, Hope,* Gray's Zool. Miscell., 1831, p. 23.
Geniates assimilis, Hope,* l. c., ♀ (new syn.).

Brown, with the elytra a little paler, and the antennæ, femora and tibiæ yellow. The head and the sides of the body beneath are rather closely clothed with decumbent grey setæ, and the pronotum bears irregular patches of similar setæ. The elytra are very sparingly sprinkled with very minute setæ, which are more numerous at the sides; towards the extremity of each elytron there are three rows of longer erect setæ meeting at the very prominent apical callus, which bears a conspicuous tuft of similar setæ.

It is long, narrow, parallel-sided and depressed. The head is finely granulated and broad, the clypeus broadly rounded and the margin strongly reflexed in the middle. The pronotum is closely but rather unevenly punctured, becoming rugose at the sides, and the lateral margins are angulated behind the middle and nearly straight from there to the front and hind angles, of which the former are acute and the latter obtuse but well marked. The scutellum and elytra are strongly and densely punctured, and the costæ are narrow but distinct. The pygidium is rather thickly clothed, except at the apex, with moderately long outstanding hair. The front tibia is armed with three sharp, but not long, equidistant teeth, and above them the outer edge is finely serrated; the longer claw of the front and middle feet is cleft. The antennæ are 10-jointed.

♂. The pronotum is rather less coarsely sculptured than that of the female, to which the name *assimilis* was given by Hope.

Length, 11–12 mm.; breadth, 5·5 mm.

Nepal; Bhutan: Maria Basti (Oberthür Coll.), Pedong (Brussels Mus.).

Types in the British Museum.

340. **Adoretus nasalis**, sp. nov. (Plate V, fig. 21.)

Brown, with the legs, antennæ and elytra yellowish, the deep punctures upon the last stained with brown, and as they are absent from the costæ, an appearance of pale longitudinal stripes is produced. The surface above and beneath bears minute uniform decumbent grey setæ, sparsely distributed, especially upon the elytra, where they are only visible with the help of a lens.

It is a parallel-sided, rather depressed species, with slender

legs and a very broad head. The clypeus is very broadly rounded, with the front margin strongly reflexed, especially in the middle, and the surface shallowly rugulose. The pronotum is coarsely pitted, with the sides obtusely angulated in the middle, nearly straight in front and behind, the front angles slightly produced and acute, and the hind angles very obtuse. The scutellum is minutely and rugosely punctured, and the elytra strongly and irregularly punctured, with well-marked elevated costæ, bordered on each side with more crowded punctures; the epipleuræ are short and the sutural angles sharp. The pygidium is minutely rugose, with rather longer erect setæ towards the apex. A sharp continuous carina extends along each side of the abdomen, and the posterior edge of the propygidium is also sharply elevated and united with the lateral carinæ by a short ridge which cuts off the last spiracle on each side. The continuous carina thus formed exactly coincides with the outer edges of the elytra. The front tibia is slender, armed with three short sharp teeth and finely serrated above them; the claws are all entire and only moderately unequal. The edges of the labrum are broadly serrated, and the rostrum bears a strongly elevated double crest, formed by a longitudinal median carina spreading out on each side at the summit. The antennæ are 10-jointed.

The longer front claw on one side is minutely cleft in the only female I have seen of the species, but that is evidently abnormal.

♂. The extremity of the pygidium is smooth and shining.

Length, 9–10 mm.; breadth, 4·75 mm.

Assam: Khasi Hills, Gauhati (May, Pusa Coll.).

Type in the British Museum.

This is one of the group of species to which Ohaus has given the generic name *Prionadoretus*, on account of the deeply serrated sides of the rostrum. I have not adopted the genus, for that character, like the distinction between a clothing of setæ and one of scales, on which the genus *Lepadoretus* is based, is one of degree only, and as the known species multiply the dividing-line is likely to become incapable of definition. Dr. Ohaus has apparently not noticed that one of the commonest Indian species of *Adoretus*, *A. limbatus*, Bl., possesses a labrum of the *Prionadoretus* type. That species has another feature of greater importance, which it does not share with the others, viz. an antenna of only nine joints. Ohaus has not mentioned the claws, which in *A. nasalis*, as in another species in the British Museum, are remarkable from the absence of any cleavage. The peculiar double crest upon the labrum of *A. nasalis* might have been regarded as a generic feature, but for its absence in other closely similar species.

341. Adoretus lemniscus.

Adoretus lemniscus, Arrow, Ann. Mag. Nat. Hist. (8) xvi, 1915 p. 232.

Adoretus parallelus, Arrow, op. cit. (8) xiii, 1914, p. 598.

Entirely brownish red, densely clothed with greyish decumbent setæ, and with a very few isolated erect hairs near the sides of the elytra.

It is elongate, parallel-sided and depressed. The eyes are very large, and the head finely granulated in front and densely rugulose behind; the clypeus small, broadly semicircular, with the margin strongly reflexed. The pronotum is very short, uneven, and finely rugulosely punctured, with its sides gently rounded, the front angles blunt and the hind angles indicated but almost rounded off. The scutellum is finely punctured, and the elytra finely rugosely punctured, with the costæ narrow and inconspicuous. The pygidium is coriaceous and clothed with rather long erect hairs. The antennæ are 10-jointed, joints 3 to 6 being elongate and nearly equal. The front tibia is long and armed with three sharp teeth, occupying less than half its length; the second and third teeth are farther apart than the first and second, and are separated by a sharp notch; the longer front and middle claws are minutely cleft, and the shorter claw of the hind foot is more than half as long as the other; the hind tibia is a little contracted at the end.

I have not seen the female.

Length, 11·5–12·5 mm.; breadth, 5 mm.

BURMA: Rangoon (*E. T. Atkinson*), Tharrawaddy, Promé (*G. Q. Corbett*), Tikekei (*L. Fea*, June).

Type in the British Museum.

It is very near *A. cribratus* and *A. distinguendus*, but easily recognized by the sharp notch separating the two upper teeth of the front tibia.

342. Adoretus celogaster.

Adoretus celogaster, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 592.

Pale yellow, with the clypeus and tarsi alone slightly reddish.

Rather broadly ovate and depressed, with the surface shining, and bearing only very sparse and minute white setæ. The head is granulated, but not densely, and the clypeus is semicircular. The pronotum is sparingly punctured, strongly rounded at the sides, with the front angles acute and the hind angles completely rounded off. The elytral costæ are distinct, the intervals not densely punctured and the epipleuræ not evident. The pygidium is clothed with moderately long erect setæ. The abdominal segments, except the first and last, have each a conical protuberance beneath in the middle. The front tibia bears three sharp teeth, the second nearer to the third than to the first and divided from it by an acute notch; the longer claw is cleft in the front and middle feet, and the shorter claw of the hind foot is more than half the length of the longer one. The antennæ are 10-jointed, the third to fifth joints progressively diminishing, the sixth rather broad.

♂. The clypeus is smaller and the eyes are more prominent than in the female. The abdomen is much contracted and hollowed, the ventral tubercles are sharply pointed, and that of the penultimate segment is large and prominent.

♀. The abdomen is convex, the ventral tubercles are broader and not sharply pointed, and that of the penultimate segment is almost absent.

Length, 8·5–9 mm.; breadth, 4·5–5 mm.

CEYLON: Anuradhapura, low country (Oct., Indian Museum).

Type in the British Museum; co-types in the Indian Museum.

This species is quite peculiar, owing to the row of curious swellings at the middle of the second, third, fourth and fifth ventral segments.

343. **Adoretus corpulentus.** (Plate V, fig. 46.)

Adoretus corpulentus, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 593.

Pale yellow, with the clypeus and tarsi alone reddish.

Very short and stout, with the surface shining, and bearing only very sparse minute setæ. The head is large, the eyes rather small, the clypeus semicircular and, like the forehead, sparingly granulated, and the vertex smooth in the middle. The pronotum is sparingly punctured, the front angles are nearly right angles, and the hind angles completely rounded off. The elytra are rather finely but not densely punctured, with distinct double lines of punctures, not forming costæ. The front tibia is armed with three acute teeth, the uppermost placed about the middle, nearer to the second than that is to the first, and separated from it by an acute notch; the longer claws of the front and middle feet are cleft, and the shorter claw of the hind foot more than half as long as the larger one. The antennæ are 10-jointed, joints 3–7 progressively diminishing in length.

♂. The pygidium is very convex and rather thickly clothed with erect hair.

♀. The pygidium is flat and scarcely pubescent.

Length, 8·5–10 mm.; breadth, 5–6 mm.

CEYLON: Trincomali (*E. E. Green*, Sept.).

Type in the British Museum.

This species has a very close resemblance to *A. celogaster*, but the remarkable abdominal processes which form the most distinctive feature of that insect are entirely absent from this. It is also rather more short and rotund, and still paler in colour, and the elytra are smoother, with finer punctures.

344. **Adoretus tener.**

Adoretus tener, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 600.

Pale yellow, shining, and thinly clothed with minute whitish

setæ, those on the elytra arranged in not very close longitudinal lines.

It is very short and stout in form and moderately convex. The head is not very broad, nor the eyes very large. The clypeus is prominent, semicircular, with very strongly raised margin, and moderately sparingly granulated. The pronotum is short, rather sparingly punctured, with strongly rounded sides, acute front angles, and hind angles completely rounded away. The scutellum and elytra are rather closely but not coarsely punctured, and the costæ upon the latter are not strong. The pygidium is finely punctured and thinly clothed with moderately long hair. The front tibia is armed with three short teeth, divided by acute notches, the third tooth placed about the middle of the tibia and nearer to the second than that is to the first; all the tarsi are slender, the longer claw of the front and middle feet is cleft, and the shorter claw of the hind foot is more than half the length of the longer one.

♂. The eyes are larger than those of the female.

Length, 8·5–9·5 mm.; breadth, 4·5–5 mm.

Burma: Victoria Point, Tenasserim (*E. T. Atkinson*, Aug.).

Type in the British Museum.

345. Adoretus renardi.

Adoretus renardi, Brenske,* Ann. Soc. Ent. Belg. xxxvii, 1893, p. 140.

Bright yellow and rather shining, with the forehead black, and the elytral suture and all the margins very narrowly tinged with red-brown. It is clothed above and beneath with very minute, uniform, evenly but not very closely arranged, pale decumbent setæ.

It is ovate, moderately broad and depressed. The head is not very broad, closely but not very finely granulated; the clypeus semicircular, with its margin well reflexed. The pronotum is rather short, moderately closely but not very finely punctured, with the sides uniformly curved, the front angles right angles, sharp but not produced, and the hind angles only very feebly indicated. The scutellum is closely punctured, and the elytra closely and confluently, with the costæ feebly marked; the epipleuræ are wide, nearly the length of the elytra, smooth and opaque, becoming widest a little before the end. The pygidium is rather finely and closely punctured and its pubescence erect. A sharp continuous carina extends along each side of the abdomen, and the posterior edge of the propygidium is also sharply elevated and united with the lateral carinæ by a short ridge which cuts off the last spiracle on each side. The continuous carina thus formed coincides with the outer edges of the elytra. The front tibia is armed with three sharp teeth, the uppermost minute and nearer to the second than this is to the apical one; the longer claw of the front and middle feet is only very slightly cleft at the tip.

♂. The pygidium is very convex and incurved at the extremity.

♀. The pygidium is not incurved and scarcely convex.

Length, 10–11 mm.; breadth, 5–6 mm.

BENGAL: Tetara, Kunbir; MADRAS: Malabar (Andrewes Collection).

Type in Capt. Moser's collection; co-type in the Brussels Museum.

346. **Adoretus epipleuralis.** (Plate V, fig. 22.)

Adoretus epipleuralis, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 601.

Adoretus saigonensis, Ohaus, Deutsche Ent. Zeits. 1914, p. 479, fig. 11 (new syn.).

Pale yellow, with the head and tarsi red, and the vertex nearly black; thinly clothed with minute, sparse, erect setæ, which are very inconspicuous. The pygidium is clothed with rather long erect hairs.

It is short, broad and rather convex, and the surface is shining. The head is finely rugose, and the clypeus broad, with its margin regularly rounded and strongly elevated. The pronotum is strongly but not closely punctured, rather short, with the sides straight in front, the front angles acutely produced and the hind angles completely rounded off. The scutellum and elytra are also strongly but not closely punctured; the costæ of the latter are moderately distinct, and the epipleuræ are continued almost to the extremities, being narrow in the middle but conspicuously dilating behind, where they are smooth and opaque. A sharp continuous carina extends along each side of the abdomen, and the posterior margin of the propygidium is also sharply elevated and united to the lateral carinæ by a short ridge which cuts off the last spiracle on each side. The continuous carina so formed coincides exactly with the outer edges of the elytra. The legs are rather long and slender, the front tibia armed with three rather long teeth, which occupy more than half its length; the longer claw is rather deeply cleft in the front and middle feet, and the shorter one of the hind foot is more than half the length of the other. The antennæ are 10-jointed, the third to seventh joints regularly diminishing.

♂. The clypeus is shorter than that of the female, and the pygidium is large and convex.

♀. The pygidium is short and flat.

Length, 10·5–11·5 mm.; breadth, 5·5–6 mm.

BURMA: Tharrawaddy, Taung-ngu (*G. Q. Corbett*); CAMBODIA: Vientiane (*R. Vitalis de Salvaza*): COCHIN-CHINA: Saigon.

Type in the British Museum; that of *A. saigonensis* in Dr. Ohaus' collection.

A. epipleuralis is very closely related to *A. renardi*, Brenske, but the clypeus is shorter and broader, the hind angles of the pronotum are completely rounded off, and the clothing of the upper surface is more scanty, being so thin that a smooth shining appearance is produced.

347. **Adoretus ariel**, sp. nov. (Plate V, fig. 23.)

Pale testaceous, with the head, an indefinite patch on each side of the pronotum, the tarsi and the abdomen beneath red-brown.

It is elongate, parallel-sided and not very convex, closely and uniformly clothed all over with short grey setæ. The head is large, densely and confluently punctured, with the clypeus closely granulated, very broadly rounded and short. The pronotum is strongly, very closely and evenly punctured, with its sides straight in front, the front angles right angles and the hind angles completely rounded off. The elytra are slightly shining, distinctly but confluently punctured, with the dorsal costæ indistinct and the epipleuræ well-marked, continued almost to the end of the elytra, but not perceptibly dilated behind; the apical angles are not sharp. The pygidium is leathery in texture and thinly clothed with erect hairs, rather longer and more numerous near the apex. A sharp continuous carina extends along each side of the abdomen, and the posterior edge of the propygidium is also sharply elevated and united to the lateral carinæ by a short ridge which cuts off the last spiracle on each side. The continuous carina so formed coincides exactly with the external margins of the elytra. The antennæ are 10-jointed, with joints 3–6 subequal. The front tibia is armed with three sharp equidistant teeth, the hind tibiæ broad, the tarsi slender, the claws not very long, the longer one cleft on the four anterior feet, the shorter hind claw more than half the length of the longer.

♂. The longer front and middle claws are rather deeply cleft at the apex.

I have not seen a female.

Length, 9·5 mm.; breadth, 4·75 mm.

ASSAM (*W. Doherty*).

Type in the British Museum.

This species is narrower and more elongate than the allied forms with continuous elytral epipleuræ, which it otherwise closely resembles.

348. **Adoretus victoriæ**, sp. nov. (Plate V, figs. 24 & 25.)

Pale yellow, with the head and tarsi red-brown.

It is rather shortly cylindrical in shape and moderately closely clothed all over with short uniform grey setæ, the pygidium alone bearing rather longer, but not thick, erect hairs. The head is large, closely and uniformly rugose, with the clypeus very broadly rounded. The pronotum is evenly and closely, but distinctly, punctured, with the sides straight, the front angles sharply produced and the hind angles completely rounded off. The elytra are rather densely but scarcely confluently punctured, with very narrow elevated discoidal costæ; the apical angles are sharp and the epipleuræ are continued almost to the apices, dilating considerably behind, where they are smooth and opaque. The

pygidium is granulated and clothed rather thinly with short hair. The lower surface is thinly setose. A sharp carina coinciding with the external margins of the elytra extends along each side of the abdomen, being continued, by means of a short ridge which cuts off the last spiracle on each side, with the hinder margin of the propygidium, which is also sharply carinate. The legs are rather slender, the front tibia armed with three strong teeth, which occupy more than half its length. The antenna is 10-jointed, joints three to seven progressively diminishing in length.

♂. The longer claw of the front and middle feet is unequally but moderately deeply cleft, and the shorter hind claw about half the length of the longer.

I have not seen a female.

Length, 11 mm.; breadth, 5·5 mm.

BURMA: Victoria Point, Tenasserim (*E. T. Atkinson*, Aug.).

Type in the British Museum.

This much resembles *A. epipleuralis*, Arrow, but is rather more closely punctured and setose, and therefore less shining. It is narrower and more convex than *A. renardi*, Brenske, and the hind angles of the prothorax are completely rounded off.

349. **Adoretus vulpeculus**, sp. nov.

Tawny-red, with the head and pronotum rather darker, and the femora and tibiæ a little paler.

The body is rather broadly oval and moderately convex, with a rather large head, and closely clothed above and beneath with longish and not very close-lying grey hair, the head having many, and the pronotum and elytra very few, long erect hairs. The clypeus is semicircular, shining and granulated (not very closely). The forehead and pronotum are strongly, closely and evenly punctured; the sides of the latter are nearly straight in front, with the front angles obtuse and rounded behind, and the hind angles almost rounded off. The scutellum is strongly punctured, and the elytra coarsely and confluently, the costæ being almost obsolete; the epipleuræ are broad and almost reach the apex, but gradually narrow from the shoulder to the extremity. The pygidium is clothed with long dense outstanding hair. A sharp carina extends along each side of the abdomen and is united by a short ridge cutting off the last spiracle on each side to the posterior edge of the propygidium, which is sharply elevated. The continuous carina so formed coincides with the outer edges of the elytra. The front tibia is armed with three acute nearly equidistant teeth, and the longer claws of the front and middle feet are very slightly cleft at the apex.

♂ unknown.

Length, 8–9 mm.; breadth, 4·5 mm.

ANDAMAN ISLANDS (*E. T. Atkinson*).

Type in the British Museum.

350. Adoretus pleuralis.

Adoretus pleuralis, Ohaus, Deutsche Ent. Zeits. 1914, p. 481, fig. 13.

"Elongate-oval, the ♀ a little dilated, rather convex, pale testaceous, slightly shining, with the head, the middle of the thorax and a broad band behind the scutellum almost reaching the hinder margin [*i. e.* of the elytra] blackish-brown, the surface reddish with scattered fine granules; frontal suture straight, carinate; forehead and vertex closely covered with fine granules and isolated punctures; eyes prominent. Thorax rather more than twice as broad as long, with the front margin produced forwards in the middle, the hind margin backwards, the sides slightly dilated behind the middle, the blunt hind angles rather rounded, the rectangular front angles hardly produced, the upper surface closely and rather confluently punctured, but the sculpture, as also that of the head, sparser in the ♀ than in the ♂. Scutellum reddish yellow, sculptured like the thorax. Upon the elytra the primary costæ and rows of punctures are indistinct; the whole surface is closely and confluently punctured, with fine short transverse rugæ at least upon the disc. The epipleuræ are very broad, yellow and shining near the shoulder, reddish brown and opaque behind, extending almost to the sutural angle, with a close short fringe upon both the thickened and crenulated upper margin and the lower margin. The hind margin of the propygidium is carinate and closely setose; it [*i. e.* the carina] is continued laterally as a carinate brown ridge which divides the ventral part of the abdominal segments from the pleural part. Pygidium short, with broadly rounded apex in the ♂, a little elevated before the apex and clothed with long erect hairs. Legs slender; front tibiæ armed with three teeth, the middle one a little approximated to the basal one; middle and hind tibiæ with two indistinct spinose ridges.

"*Length*, 10·5 mm.; breadth, 5–5·5 mm.

"British India: ? Assam."

Type in Dr. Ohaus' collection.

I do not know this species.

351. Adoretus bimarginatus.

Adoretus bimarginatus, Ohaus, Deutsche Ent. Zeits. 1914, p. 480, fig. 12.

Bright yellow, with the head and tarsi dark red, the vertex nearly black.

It is rather short, broad, and fairly closely clothed with short uniformly disposed decumbent white setæ. The head is large and densely rugose, with the eyes not very large or prominent, and the clypeus broadly semicircular. The pronotum is convex, fairly closely but distinctly punctured and rather shining, with the sides strongly rounded, the front angles nearly right angles

and the hind angles completely rounded away, there being a rather shallow and indefinite longitudinal groove in the middle. The elytra are densely and confluently punctured, with very slightly indicated costæ, and have at the outer edge distinct but narrow and not opaque epipleuræ extending from the shoulders almost to the extremities, and studded with a fringe of short stiff bristles. A sharp carina extends along each side of the abdomen, and the posterior margin of the propygidium is also sharply elevated and joined to the lateral carinæ by a ridge on each side which cuts off the last spiracle. The outer edges of the elytra fit against the continuous carina thus formed. The pygidium is almost uniformly clothed with short erect pubescence. The antennæ are 10-jointed. The front tibia is armed with two very strong and sharp teeth, and a third placed nearer to the second than that is to the first; the hind tibia is rather broad and scarcely contracted before its extremity; the tarsi are moderately slender, and the longer front and middle claws cleft.

The sexes scarcely differ, except in the shape of the abdomen.

Length, 9·5 mm.; breadth, 5 mm.

MADRAS: Berhampur, Ganjam (*E. T. Atkinson*); BENGAL: Pusa (*T. Bainbrigge Fletcher*), Chapra (*Mackenzie*); UNITED PROVINCES: Dehra Dun (July); SIKKIM: Pashok, Darjiling, 3500 ft. (*F. H. Gravely*, May, June).

Type in Dr. Ohaus' collection.

Both sexes were taken in large numbers at light in June by Mr. T. Bainbrigge Fletcher. It was also found underground at the roots of motha (*Cyperus*) and of a gular tree (*Ficus glomerata*) in the same locality.

352. **Adoretus simplex.** (Plate V, fig. 40.)

Adoretus simplex, Sharp,* Journ. Asiat. Soc. Bengal, xlvii, 2, 1878, p. 173; Ohaus, Deutsche Ent. Zeits. 1914, p. 488.

Rather pale testaceous, and closely clothed above and beneath with uniform pale decumbent pubescence.

Elongate-oval in shape and rather depressed. The clypeus is large, semicircular and, like the forehead, closely granulated. The pronotum is strongly and moderately closely punctured, more closely at the sides, which are strongly rounded, with the front angles acute and the hind angles very obtuse. The scutellum and elytra are densely punctured, and the costæ of the latter are not very distinct. A sharp carina, coinciding with the outer edges of the elytra, extends along each side of the abdomen and is connected by a short ridge cutting off the last spiracle on each side with the hinder margin of the propygidium, which is also carinate. The pygidium is thickly clothed with hair, with a very small denuded patch at the apex, and the hairs surrounding this are long, close and erect. The antennæ are 10-jointed, with the basal joint strongly clubbed, the second globular, the third to seventh regularly diminishing in length. The front tibia is armed with

three strong, nearly equidistant teeth, and the longer claw of the front and middle feet is cleft.

♂. The eyes are larger, the antennal club longer, the longer front and middle claws blunt and only very minutely cleft, and the pygidium long.

Length, 10·5–11·5 mm.; breadth, 4·5–5·5 mm.

KASHMIR, Sonamarg, 8600 ft. (*T. R. D. Bell*); PUNJAB: Jhilam, 5000 ft. (*Stoliczka*).

Type in the Indian Museum, Calcutta.

353. Adoretus singhalensis.

Adoretus singhalensis, Ohaus, Stett. Ent. Zeit. 1900, p. 362.

Entirely reddish brown, with the femora and tibiæ generally yellowish.

Elongate and depressed in form, and clothed rather thickly with coarse greyish setæ, with some very long erect ones intermixed, especially upon the posterior part of the elytra. The legs are rather long. The clypeus is closely granular, the forehead, pronotum and elytra very densely, subrugosely punctured. The clypeus is nearly semicircular, rather long, the eyes large and prominent. The pronotum is very short, well rounded at the sides, the front angles nearly right angles and rather blunt, the hind angles very obtuse. The elytral costæ are narrow and not very strongly marked; the hairy clothing of the pygidium is not long or thick. A sharp carina extends along each side of the abdomen, coinciding with the outer edges of the elytra, and this is united by a short ridge, cutting off the last spiracle on each side, with the hind margin of the propygidium, which is sharply elevated. The front tibia is rather long and armed with three sharp teeth; the longer claw is minutely cleft at the extremity in the front and middle feet, and the shorter claw of the hind foot is reduced to a vestige. The antennæ are long.

♂. The body is proportionally longer, more parallel-sided and more flat than that of the female; the eyes are larger, the clypeus much smaller; the front tibia is more slender, the teeth short and the second nearer to the first than to the third, the hind tibia rather inflated; and the apical part of the pygidium is smooth and shining.

♀. The body is broader and less flattened, the clypeus large, the teeth of the front tibia longer, and the pygidium very short.

Length, 12 mm.; breadth, 5–6 mm.

CEYLON: Kandy.

Type in Dr. Ohaus' collection.

354. Adoretus nephriticus. (Plate V, fig. 11.)

Chætadoretus nephriticus, Ohaus, Deutsche Ent. Zeits. 1914, p. 495, fig. 29.

Tawny-red, with the femora and tibiæ yellow.

Elongate, rather parallel-sided and not very convex, rather closely clothed with fine grey hairs, with longer erect scattered hairs at intervals. The head is finely and closely rugose, with the clypeus rather small and its front margin (in the male) gently excised in the middle. The pronotum is short, finely, closely and evenly punctured, with its sides gently rounded, the front angles slightly and the hind angles very obtuse. The elytra are closely and rather confluently punctured, with distinct narrow costæ. The pygidium is rather closely clothed with moderately long erect hairs. A sharp carina extends along each side of the abdomen, and the posterior margin of the propygidium is also sharply elevated and united to the abdominal carinæ by a short ridge on each side, in which the last spiracle is placed. The legs are slender, the front tibia armed with three sharp, nearly equidistant teeth, the longer front and middle claws extremely minutely cleft, and the shorter hind claw very small (about a quarter of the length of the longer).

The female (which I have not seen) has the clypeus semicircular, according to Ohaus.

Length, 9 mm.; breadth, 4·5 mm.

MADRAS: Nilgiri Hills (*Sir G. F. Hampson*), Shevaroy Hills, Yercaud (*T. B. Fletcher*, April, May), Pondicherry, Trichinopoli, Shembaganur, Kodaikanal.

Type in Dr. Ohaus' collection.

This is nearly related to *A. excisus*, Oh. (which I have not seen), but is smaller, and the punctures and hairs are evidently much closer and more numerous. There is no bare spot in the middle of the pronotum, which has no metallic lustre, and the hairs of the elytra are not at all scale-like, nor those of the pygidium few and short. The male is readily recognizable by the slight sinuation of the front margin of the clypeus.

355. **Adoretus affinis**, sp. nov. (Plate IV, fig. 27.)

Reddish brown, with the femora and tibiæ and the sides of the pronotum and elytra testaceous, the pale colour upon the upper surface merging imperceptibly into the darker shade.

It is elongate-oval in shape, convex, and rather closely clothed with very fine uniform pale setæ. The clypeus is very short, broad, regularly rounded and moderately closely granulated; the forehead rugose and the vertex closely punctured. The pronotum is strongly and densely, but not rugosely, punctured, with the sides rounded, the front angles obtuse and the hind angles rounded. The scutellum is closely punctured, and the elytra closely and rather coarsely, but not rugosely, with faintly developed costæ and with distinct but not wide or opaque epipleuræ. There is a sharply-defined carina extending along each side of the abdomen and united by a short ridge, which cuts off the last spiracle on each side, to the hind margin of the propygidium, which is also sharply elevated. The continuous carina so formed

coincides with the outer edges of the elytra. The legs are slender, the front tibia is furnished with three strong sharp teeth, the longer front and middle claws are cleft, and the shorter hind claw is more than half the length of the longer one.

♂. The eyes are larger and more prominent, and the clypeus is smaller than in the female.

Length, 9·5 mm.; breadth, 4·5 mm.

ASSAM: Patkai Hills (*W. Doherty*).

Type in the British Museum.

A. affinis has the closest relationship and similarity to *A. ariel*, but the elytral epipleuræ, although distinct, are narrow and not different in texture from the remaining surface.

356. **Adoretus debilis**, sp. nov.

Uniformly very pale yellow, with the antennæ and tarsi alone a little darker.

It is narrowly elongate, rather depressed, shining and only very scantily clothed with minute setæ. The clypeus is lightly rugulose, subangularly produced in the middle of the front margin, which is broadly but obliquely reflexed. The forehead is a little more closely rugulose and the eyes are not very large. The pronotum is very thinly punctured, especially in its median part, and the sides are gently and uniformly rounded, with the front angles rather acute and the hind angles very obtuse. The elytra are strongly but not very densely punctured, with the costæ narrow and rather indistinct in front, broader and more pronounced behind. The pygidium is clothed with erect setæ, which are longer and closer just above the apex. A continuous sharp carina extends along each side of the abdomen, and the posterior margin of the propygidium is also sharply elevated and united to the lateral carinæ by a short ridge, which cuts off the last spiracle on each side. The outer edges of the elytra exactly coincide with the continuous carina formed in this way. The front tibia is armed with three very strong sharp teeth, the uppermost farther from the second than that is from the first; the tarsi are not long, the longer front and middle claws cleft at the tip. The antennæ are 10-jointed, the seventh joint extremely short.

♀ unknown.

Length, 9·5 mm.; breadth, 4·5 mm.

BENGAL: Pusa.

Type in the British Museum, co-type in the Agricultural Research Institute, Pusa.

Taken under dry leaves and at light.

357. **Adoretus incurvatus.**

Adoretus incurvatus, Ohaus, Deutsche Ent. Zeits. 1914, p. 487, fig. 20.

Reddish-brown, with the front of the clypeus, the sides of the

pronotum and the legs testaceous yellow. The punctures of the elytra are stained brown, so that the longitudinal costæ, which are free from punctures, seem to form pale stripes.

It is rather elongate, parallel-sided and depressed, smooth and shining, and thinly clothed with very minute grey setæ. The head is very large and closely granular, with the eyes wide apart and the clypeus nearly semicircular, but a very little produced in front. The pronotum is deeply and irregularly, but distinctly, punctured, with the sides rounded, the front angles right angles and the hind angles very obtuse. The scutellum is finely and rugosely punctured, and the elytra are finely, deeply and rather closely, but not rugosely, punctured, with well-marked narrow costæ: the epipleuræ are short, and the sutural angle is slightly rounded. The pygidium is short in both sexes and clothed with erect but not long hairs. There is a continuous sharp carina extending along each side of the abdomen and coinciding with the edges of the elytra. The posterior edge of the propygidium is also sharply elevated and united with the lateral carinæ by a short ridge which cuts off the last spiracle on each side. The legs are slender, the front tibia armed with three rather short teeth, the uppermost farther from the second than that is from the first, the hind tibia not inflated, the longer claw minutely cleft on the front and middle feet, and the shorter claw of the hind foot more than half the length of the longer. The antenna is 10-jointed, joints 5–7 very small.

♂. The teeth of the front tibia are very sharp, the margin of the clypeus strongly reflexed, especially in the middle, and the eyes more prominent than in the female.

Length, 11 mm.; breadth, 5 mm.

MADRAS: Nandidrug (*T. V. Campbell*); BOMBAY: Belgaum (*H. E. Andrewes*), Poona, Manjiri (July); BENGAL: Pusa (*T. Bainbrigge Fletcher*, June).

Type in Dr. Ohaus' collection.

358. **Adoretus nitidus.** (Plate V, fig. 26.)

Adoretus nitidus, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914 p. 599.

Pale yellow, with the tarsi and clypeus red, and the vertex of the head nearly black; very thinly clothed with minute greyish setæ.

Very long and cylindrical, with the head not very wide, the clypeus relatively moderately large, semicircular, with strongly reflexed margin. The head is transversely rugulose, the clypeus rather laxly. The pronotum is coarsely but very scantily punctured (a little more closely at the sides), with the lateral margins strongly rounded, the front angles acute and the hind angles completely rounded away. The scutellum is sparingly punctured, and the elytra moderately strongly and closely, with not very well-marked costæ. The pygidium is finely coriaceous

and clothed with short erect setæ. The front tibia is armed with two strong but not very sharp teeth, and a third which is minute and stands beyond the middle, but nearer to the second than that is to the first; the tarsi are rather slender and the claws not very long, the longer front and middle ones cleft, and the shorter one of the hind foot more than half the length of the other. The antenna is 10-jointed.

♂. The longer front and middle claws are minutely cleft at a little distance from the tip, and the pygidium is large and convex.

♀. The pygidium is very short and the abdomen very convex.

Length, 10–11 mm.; breadth, 5 mm.

BURMA: Mandalay (*H. L. Andrewes*, June), Minhla (*Comotto*), Da Yenang-Yaung (*L. Fea*, May), Shenmaga (*L. Fea*, June).

Type in the British Museum; co-types in the Genoa Museum and Mr. H. E. Andrewes' collection.

359. Adoretus pallens.

Adoretus pallens, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 233.

Adoretus nudiusculus, Sharp, Journ. Roy. Asiat. Soc. Bengal, xlvii, 2, 1878, p. 173 (new syn.).

Bright yellow, with the tarsi and the vertex (or the whole) of the head deep red, the surface of the body rather thinly clothed with minute pale setæ, the sides fringed with long hair.

It is rather narrow, convex and cylindrical. The eyes are prominent and the clypeus rather broadly transverse, with the sides nearly parallel and the margin strongly reflexed; like the forehead, it is shining and finely and not closely punctured. The pronotum is also shining, deeply and rather sparingly punctured, with the sides strongly rounded, the front angles acute and the hind angles entirely rounded off. The scutellum is well punctured, and the elytra rugosely and indistinctly, with the costæ not well marked. The pygidium is rather closely clothed with soft, not very long or erect hair. The antennæ are 10-jointed, the first joint clubbed, the second globose, the third to seventh regularly diminishing in length. The front tibia is armed with three strong teeth, and the longer claw of the front and middle feet is cleft.

♂. The teeth of the front tibia are very sharp, the longer front and middle claws are minutely cleft at a little distance from the apex, and the pygidium is large and convex.

♀. The pygidium is short and covered by the elytra and the abdomen is very tumid.

Length, 8·5–10 mm.; breadth, 4–5 mm.

BURMA: Taung-ngu, Promé, Tharrawaddy (*G. Q. Corbett*). Myingyan (*T. B. Fletcher*, Aug.).

Type in the Paris Museum; that of *A. nudiusculus* in the Indian Museum, Calcutta.

360. Adoretus lithobius.

Adoretus lithobius, Ohaus, Deutsche Ent. Zeits. 1914, p. 485, fig. 16.

Reddish chestnut, with the forehead nearly black, and the sides and middle line of the pronotum, the scutellum, legs and lower surface yellowish. The upper surface is rather shining and not very closely clothed with short uniform white setæ.

Fig. 71.—*Adoretus lithobius.*

It is ovate, with the head and thorax rather narrow, and the greatest breadth towards the extremity. The head is not quite as wide as the prothorax, the eyes being very large and prominent; the clypeus small and semicircular, its front margin strongly reflexed and the surface rather shining, with evenly distributed, but not close granules; the forehead and vertex are coarsely punctured. The pronotum is shining and coarsely punctured, the punctures quite separate, except at the sides, where they are rather rugose; the lateral margins are strongly rounded and all the angles obtuse. The scutellum is finely punctured, and the elytra closely and confluently, with well-marked narrow costæ. The pygidium is thinly clothed with rather long erect hair, except near the apex where it is very smooth and shining. The legs are rather slender, the front tibia armed with three equidistant teeth, the claws long, the longer one cleft on the front and middle feet, and the shorter one of the hind foot more than half the length of the longer.

♂. The cleavage of the longer front and middle claws is very minute, and the eyes are very large.

Length, 9–11 mm.; breadth, 4·5–5 mm.

PUNJAB: Lahore; Jhilam, 5000 ft.; Kulu Valley (*C. Rost*); UNITED PROVINCES: Ranikhet (*H. G. Champion*, June to Aug.); Siahadevi, 6000 ft. (*C. F. C. Beeson*, June).

Type in Dr. Ohaus' collection.

361. Adoretus ladakanus.

Adoretus ladakanus, Ohaus, Deutsche Ent. Zeits. 1914, p. 484, fig. 17.

Reddish brown, with the clypeus, sides of the pronotum, the scutellum, femora and tibiæ a little paler, and clothed everywhere with minute, uniform, not very closely set, whitish setæ.

It is elongate-oval in shape, moderately shining and not very convex. The clypeus is broadly rounded and granulated, but not very closely; the forehead and vertex are strongly and moderately closely punctured. The pronotum is distinctly, not closely punctured, with the sides rounded, the front angles almost right angles and the hind angles obtuse. The scutellum is finely

punctured, and the elytra are strongly and closely but scarcely confluently punctured, with well-marked narrow costæ. The pygidium is clothed with fine and moderately close but not long hair. The legs are rather slender, the front tibia armed with three strong equidistant teeth, the hind tibia not broad, the longer claw of the front and middle feet minutely cleft at the end, and the shorter claw of the hind foot more than half the length of the longer. The antenna is 10-jointed.

♂. The clypeus is smaller than in the female, the eyes are very large and prominent, and the antennal club rather long.

Length, 10–11 mm.; breadth, 5 mm.

PUNJAB: Murree (? *T. R. D. Bell*); KASHMIR: Ladak (*Stoliczka*, type).

Type in Dr. Ohaus' collection.

362. **Adoretus stoliczkæ.**

Adoretus stoliczkæ, Ohaus, Deutsche Ent. Zeits., 1914, p. 490, fig. 24.

Tawny yellow, with the forehead and vertex, the pronotum (with the exception of broad lateral margins), a sutural stripe common to both elytra (broad at the base and narrowing to the extremity), and the tarsi, brown or red-brown. The darkly-pigmented part of the pronotum is sometimes reduced to a patch or spot on each side of the middle and is occasionally absent altogether. The scutellum is always pale.

The body is oval in shape, moderately convex and rather shining, with a somewhat scanty clothing of minute setæ above. The head is not very large, but the clypeus is broadly semicircular, granulated and rather closely clothed with grey setæ: the forehead is strongly punctured and rather closely setose. The pronotum is coarsely and deeply, but scantily and irregularly, punctured, and correspondingly thinly clothed with fine setæ; the sides are straight in front and rounded behind, with the front angles acute and the hind angles rounded off. The scutellum is rugosely punctured, and the elytra deeply, coarsely and rather confluently, with somewhat indistinct costæ. The pygidium is closely clothed with very fine grey hair. The legs are rather slender, the front tibia armed with three sharp equidistant teeth, the longer front and middle claws minutely cleft, and the shorter hind claw more than half the length of the longer.

♂. The longer front and middle claws are very unequally cleft.

♀. The longer front and middle claws are equally cleft. The pronotum is very smooth and shining, with exceedingly scanty punctures and hairs.

Length, 9·5–12 mm.; breadth, 5–6 mm.

BOMBAY: Surat (*H. M. Lefroy*, July); CENTRAL PROVINCES: Jabalpur Distr. (Indian Museum), Nagpur (*E. A. D'Abreu*, June), Donawa Betul, Gondia (June, Pusa Coll.).

Type in Dr. Ohaus' collection.

This is a very abundant species, greatly attracted by light. It is easily recognised by the very scanty puncturation of the pronotum, especially in the female.

363. **Adoretus kanarensis**, sp. nov. (Plate V, fig. 27.)

Bright testaceous yellow, with the head, the pronotum (except the lateral margins), a broad sutural stripe upon the elytra, spreading to the humeral callus anteriorly and not quite reaching the margins posteriorly, the extremities of the tibiæ, and all the tarsi, deep reddish-brown.

Fig. 72.—*Adoretus kanarensis*, ♂.

It is elongate-oval in shape and rather shining, the clothing consisting of minute pale setæ rather thinly scattered, except upon the head and pygidium, where they are longer and closer. The head is transversely rugose, not very large, with the clypeus broadly rounded. The pronotum is very coarsely but not very closely punctured, with the sides rounded, the front angles nearly right angles and the hind angles obtuse. The scutellum is finely rugose, and the elytra are coarsely and confluently punctured, with well-marked elevated costæ. The pygidium has a bare apical area. The legs are slender, the front tibia is armed with three strong equidistant teeth, the larger claw of the front and middle feet is cleft, and the shorter hind claw is more than half the length of the longer. The antenna is 10-jointed, joints 3–5 progressively diminishing.

Length, 10 mm.; breadth, 5 mm.

BOMBAY: North Kanara.

Type in the British Museum.

I have seen only a single male specimen, taken by Mr. T. R. D. Bell.

364. **Adoretus rugosus.** (Plate V, fig. 33.)

Adoretus rugosus, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 589.

Dark brown, with the antennæ and femora yellow.

Narrowly elongate and parallel-sided, and moderately closely clothed with rather coarse greyish or yellowish hair, with longer erect hairs interspersed. The pygidium, legs, and lower surface are clothed with rather long upstanding hair. The eyes are exceedingly large and prominent, the clypeus small, semicircular, and granulated, and the forehead and pronotum coarsely and closely punctured, the latter with the sides moderately rounded, the front angles nearly right angles and the hind angles obtuse. The elytra are entirely coarsely rugose, without visible punctures

and with only vague indications of the usual costæ. The pygidium is shining and clothed with long erect hairs. The legs and antennæ are very long and slender, the front tibia armed with three small but sharp teeth, the uppermost one very minute and more distant from the second than that is from the first; the longer claw is cleft upon the front and middle feet, and the shorter claw of the hind foot is about half the length of the longer one. The antennæ are 10-jointed, joints 3–6 very elongate.

♂. The longer claw of the front and middle feet is cleft at a considerable distance from the tip.

Length, 13·5–14·5 mm.; breadth, 6 mm.

CEYLON: Maskeliya (*E. E. Green*, May, August).

Type in the British Museum.

This is one of the larger species of *Adoretus*. It has considerable resemblance to *A. singhalensis*, Ohaus, but is larger, and differs from that and most other *Adoreti* in the rugose elytra, the usual paired rows of punctures and close-set interstitial puncturation being quite absent.

365. **Adoretus ovalis.** (Plate V, fig. 28.)

Adoretus ovalis, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 233; Sharp, Ann. Mag. Nat. Hist. (7) xii, 1903, p. 472.

Dark brown or almost black, with the antennæ, legs and lower surface lighter, and usually also the clypeus, sides of the pronotum and shoulders of the elytra; the whole very evenly and rather closely clothed with minute decumbent greyish setæ.

Elongate-ovate in shape and rather convex, with the head small. The clypeus is semicircular and densely granulated, with the margin feebly reflexed, and the forehead is roughly punctured. The pronotum is densely punctured, convex, with the sides strongly rounded and approximating anteriorly; the front angles are acute, and the hind angles well-marked and only slightly rounded. The elytra are rather rugosely punctured and the costæ indistinct. The pygidium is flat, finely coriaceous and clothed with grey hair, which is longer and not decumbent at the apex. The legs are rather long, the front tibia armed with three sharp equidistant teeth, and the longer front and middle claws cleft. The antennæ are 10-jointed, the first joint clubbed, the second globular, the third to seventh gradually diminishing.

♂. The clypeus is a little smaller, the longer front and middle claws are extremely minutely cleft, and the pygidium is moderately long.

♀. The clypeus is larger and slightly pointed and the pygidium very short.

Length, 10–12 mm.; breadth, 5·5–6 mm.

MADRAS: Nilgiri Hills (*H. L. Andrewes*), Utakamand (*C. A. Barber*, April).

Type in the Paris Museum.

366. **Adoretus sorex**, sp. nov. (Plate V, fig. 29.)

Chocolate-red, with the femora and tibiæ pale yellow.

Rather narrow and moderately convex in form, clothed somewhat closely with not very short or regularly disposed hairs, intermixed with rather longer erect ones upon the elytra, those on the pygidium long and erect. The clypeus is broadly rounded and, like the forehead, densely and finely rugose. The pronotum is closely but not very finely punctured, with the sides rounded, the front angles rather obtuse and the hind angles rounded. The scutellum is finely punctured, and the elytra closely but scarcely rugosely, with rather indistinct costæ. The legs are moderately slender, the front tibiæ armed with three teeth (the uppermost very minute), the claws very unequal, the longer one minutely cleft on the front and middle feet, the shorter one on the hind foot exceedingly short.

♂. The eyes are large and prominent, the clypeus small but not very short, and the margin almost straight.

♀ unknown, but it has probably a larger and more rounded clypeus.

Length, 8 mm.; breadth, 4 mm.

CEYLON: Horowapotana (*C. F. S. Baker*, Nov.); MADRAS: Coimbatore (*M. J. Walhouse*); CENTRAL PROVINCES: Nagpur, 1000 ft. (*E. A. D'Abreu*, June).

Type in the British Museum.

367. **Adoretus cribratus.** (Plate V, fig. 32.)

Adoretus cribratus, White, Ann. Mag. Nat. Hist. xiv, 1844, p. 424.

Adoretus parallelus, Kraatz,* Wien. Ent. Zeit. 1895, p. 252 (new syn.).

Uniform light brown or red-brown, evenly and closely clothed with minute decumbent setæ, with a very few longer hairs near the sides and extremities of the elytra.

The body is elongate, parallel-sided and depressed. The head is finely, densely and confluently punctured, the eyes very large and prominent, and the clypeus small and semicircular. The pronotum and scutellum are finely, densely and confluently punctured, the former very short, with the front angles nearly right angles and the hind angles very obtuse. The elytra are rugosely punctured and the costæ indistinct; the apical extremities are subangular (*i. e.* only minutely rounded) at the suture. The clothing of the pygidium is erect and long upon the lower half. The front tibia is armed with three sharp equidistant teeth, the uppermost one minute, the hind tibia is a little contracted at the extremity, and the longer claw of the front and middle feet is cleft. The antenna is 10-jointed.

♂. The clypeus is smaller than that of the female. The antenna is rather long, the club nearly as long as the foot-stalk. The front tibia is rather long and the teeth are rather feeble.

The longer claw of the front and middle feet is only very minutely cleft.

Length, 11–13 mm.; breadth, 5–6 mm.

BURMA: Teinzo (*L. Fea*, May), Pegu, Tikekee (*L. Fea*, June), Bhamo (*L. Fea*, Aug.), Moulmein, Tenasserim; SIAM; CHINA: Hongkong.

Type in the British Museum; that of *A. parallelus* in the Berlin Entomological Museum.

368. Adoretus lasius.

Adoretus lasius, Ohaus, Deutsche Ent. Zeits. 1914, p. 501, fig. 35.

Brownish black, with the antennæ and legs reddish; uniformly and rather thickly clothed above and beneath with moderately long grey decumbent setæ, the costæ bearing in the posterior part a very few inconspicuous erect hairs.

It is elongate in shape and the legs are not long. The eyes are very large and prominent, the clypeus semicircular and densely granular, and the forehead and vertex rugosely punctured. The pronotum is very strongly and closely punctured, the sides rugosely; the lateral margins are straight in front, the front angles right angles and the hind angles almost rounded away. The scutellum is finely and densely punctured; the elytra are rugosely punctured, with not very distinct costæ, the epipleuræ not distinct behind and the sutural angles rounded. The pygidium is rather uniformly clothed with not very long erect hairs. The antenna is 10-jointed, joints 3 to 5 short and equal. The front tibia bears three sharp equidistant teeth, the hind tibia is very stout, the claws are very unequal, the shorter one on the hind foot less than half the length of the other, and the longer front and middle ones minutely cleft.

♂. The body is very long and narrow, with the clypeus very small, and the eyes very large and prominent. The teeth of the front tibia are short but very sharp, the longer front and middle claws are exceedingly minutely cleft, and the larger middle claw is angulated towards the middle of its lower edge.

Length, 11–12·5 mm.; breadth, 5–6 mm.

SIKKIM: Gopaldhara, Rungbong Valley (*W. K. Webb*, June), Mungphu (*E. T. Atkinson*), Pashok, Darjiling, 3500 ft. (*F. H. Gravely*, May, June), Kurseong (*Verschraeghen*); ASSAM: Patkai Hills (*W. Doherty*).

Type in Dr. Ohaus' collection.

369. Adoretus posticalis, sp. nov. (Plate IV, figs. 33 & 34.)

Reddish brown, with the femora and tibiæ pale yellow; clothed with not very close or short grey hair, interspersed with longer erect hairs on the elytra.

It is rather narrow and depressed. The head is shining and rather sparingly granulated, with the clypeus small and broadly

semicircular, the eyes large and very prominent. The pronotum is short, rather coarsely but moderately closely punctured, with the front angles right angles and the hind angles completely rounded off. The elytra are coarsely and rugosely punctured, but rather shining, the hairy clothing being not at all close, although rather long; the apical calli of the elytra are prominent, the vertical posterior part is almost devoid of hair, and the hairs upon a small longitudinal area placed just anteriorly and interiorly to the calli are more closely aggregated, forming upon each elytron an inconspicuous elongate white spot. The pygidium is rather uniformly clothed with long erect hairs. The legs are slender, the front tibia armed with three sharp teeth, of which the uppermost is rather remote from the others; the longer front and middle claws are minutely cleft, and the shorter hind claw is about half the length of the other.

I have not seen a female.

Length, 8·5 mm.; breadth, 4·5 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

This seems to be nearly related to the Bornean *A. trichostigma*, Ohaus, of which, however, the puncturation is said to be not coarse, and the hairy clothing of the elytra short and close-lying.

370. Adoretus furcifer.

Adoretus furcifer, Ohaus, Deutsche Ent. Zeits. 1914, p. 502, fig. 36.

Uniform dark brown, and rather closely clothed with uniform grey setæ.

Elongate-oval in shape and not very convex. The clypeus is short, broadly rounded and closely granular, the forehead densely rugose. The pronotum is densely punctured, with the sides straight in front and strongly rounded behind, the front angles right angles and the hind angles completely rounded off. The scutellum is finely and closely punctured, and the elytra are rugosely punctured, with very indistinct costæ. The pygidium is entirely clothed with soft, erect, but not long hair. The legs are rather slender, the front tibia armed with three sharp teeth, the uppermost one rather remote from the other two, the hind tibia very narrow at the end and rather inflated in the middle, and the shorter hind claw more than half the length of the longer.

♀ unknown.

Length, 11 mm.; breadth, 5 mm.

ASSAM: Khasi Hills.

Type in Dr. Ohaus' collection.

A single specimen in the British Museum was taken (in the same region as the type) by Sir Joseph Hooker in 1853.

371. **Adoretus andrewesi.**

Adoretus andrewesi, Ohaus, Deutsche Ent. Zeits. 1914, p. 485, fig. 18.

Deep red-brown, with the antennæ, femora and tibiæ a little paler, and rather closely clothed with uniform decumbent grey hair.

It is elongate-oval in shape and almost parallel-sided. The head is moderately large, with the clypeus nearly semicircular and rather coarsely rugose, the forehead strongly and rather rugosely punctured. The pronotum is strongly punctured, rugosely towards the sides; the lateral margins are gently rounded, the front angles acute and the hind angles obtuse. The elytra are strongly and densely, but rather distinctly, punctured and the costæ are narrow and not very well marked. The pygidium is finely punctured and clothed with moderately long, but not thick, erect hair, with a bare shining area near the apex. The front tibia is armed with three strong, nearly equidistant teeth, the hind tibia is rather inflated, the longer claw is cleft on the front and middle feet, and the shorter hind claw is about half the length of the longer. The antenna is 10-jointed, joints 3–5 progressively diminishing.

♂. The clypeus is a little smaller than in the female, its front edge a little flattened, and the eyes more prominent. The pronotum is moderately closely, but not densely, punctured. The front tibia is more slender, its teeth sharper, and the longer front and middle claws are very minutely cleft at the tip. The club of the antenna is rather long.

♀. The clypeus is rather large and semicircular. The pronotum is rather more sparingly punctured than in the male.

Length, 10–11 mm.; breadth, 4·5–5·5 mm.

BOMBAY: North Kanara (*T. R. D. Bell*), Belgaum (*H. E. Andrewes*).

Type in Dr. Ohaus' collection or that of the Berlin Entomological Museum. Specimens from the same series are in the British Museum and in Mr. H. E. Andrewes' collection. Those from which Ohaus has described this species (and others) are amongst a number not returned by the late Dr. Kraatz when lent to him for determination by Mr. Andrewes.

372. **Adoretus plebejus**, sp. nov. (Plate V, fig. 48.)

Uniform chocolate-red, with the femora and tibiæ pale yellow, and densely and evenly clothed with not very short uniform grey pubescence.

It is oval, not very elongate, and moderately convex. The head is moderately large, closely and rugosely punctured, with the clypeus broadly rounded. The pronotum is strongly and densely punctured, with the sides strongly rounded, the front angles right angles and the hind angles completely obliterated. The

elytra are strongly, coarsely and rather confluently punctured, with the costæ elevated and distinct, and without continuous or opaque epipleuræ. The pygidium is finely rugose and rather evenly clothed with not very long erect hair. The legs are rather stout, the front tibia armed with three strong, sharp, nearly equidistant teeth, the hind tibia a little inflated, the longer front and middle claws strongly cleft, and the shorter hind claw more than half the length of the longer.

♂. The clypeus is a little smaller, and the eyes are rather larger and more prominent than in the female.

Length, 10 mm.; breadth, 5·5 mm.

BURMA.

A specimen of each sex was taken by Capt. A. K. Weld Downing.

373. **Adoretus duvauceli.** (Plate V, fig. 43.)

Adoretus duvauceli, Blanch.,* Cat. Coll. Ent. Mus. Paris, 1851 (1850), p. 232.
Adoretus concolor, Blanch.,* l. c. (new syn.).

Uniform dull brick-red, evenly and moderately closely clothed with decumbent grey setæ.

Slightly elongate and rather depressed. The clypeus is rather closely granulated, short and transverse, with its margin broadly arcuated and very slightly reflexed; the forehead is similarly but a little less finely sculptured. The pronotum is short and strongly, closely, but not densely punctured, with the front angles acute and the hind angles almost rounded off. The scutellum is rugosely punctured, and the elytra strongly and densely, with narrow, rather inconspicuous costæ; the apical callus bears a minute white spot, formed of closely aggregated setæ. The front tibia is armed with three equidistant, not very sharp teeth, and the longer claw of the front and middle feet is cleft at the extremity. The antennæ are 10-jointed, the first joint being long, the second globular, the third long, the fourth to seventh progressively diminishing in length.

♂. The eyes are large and the clypeus small. The whole apical part of the pygidium is shining and devoid of hairs, those of the remaining surface being long and upstanding. The longer claw of the middle foot bears an obtuse tooth before the middle of its inner edge.

♀. The clypeus is larger, the eyes smaller, and the pronotum more coarsely punctured.

Length, 11–13 mm.; breadth, 5·5–7 mm.

CENTRAL PROVINCES: Mhow (*C. F. Selous*); UNITED PROVINCES: Agra; SIKKIM: Darjiling (*G. Rogers*); BENGAL: Calcutta (*F. H. Gravely*, March–June), Sarda (*F. W. Champion*), Pusa (*T. Bainbrigge Fletcher*, July-Sept.).

Types in the Paris Museum.

According to Mr. T. B. Fletcher, this beetle has been found to do great damage to the leaves of vines and figs in the Government

Gardens at Jolikote, Kumaon. It was found by Mr. Gravely upon *Lagerstrœmia* and *Cassia*.

This species is exceedingly like *A. versutus*, but a little more densely punctured, especially upon the pronotum. It can most readily be distinguished by means of the minute tuft of massed white setæ upon the apical callus of the elytron. This is quite absent in *A. versutus*. In the males the ædeagi are quite different, although alike in their strange asymmetrical shape.

374. **Adoretus horticola**, sp. nov. (Plate V, fig. 34.)

Coppery black, with the antennæ and legs reddish; densely clothed above and beneath with minute uniform scale-like setæ lying close to the surface, except upon the pygidium.

It is rather elongate and moderately convex; the head and prothorax are not wide, nor the eyes large. The head is densely granular and the clypeus semicircular. The pronotum is finely, densely and rugosely punctured, with the sides obtusely angulated in the middle, the front angles rather acute and the hind angles obtuse but well marked. The elytra are moderately finely and shallowly pitted, with distinct narrow costæ. The pygidium is large, finely rugose and tumid in both sexes, with a bare shining area at the extremity. The legs are slender, but the hind tarsi short and thick. The front tibia bears three short teeth, the second and third rather far apart, and the longer claw in the front and middle feet is very minutely cleft at the tip.

♂. The teeth of the front tibia are sharp, and the pygidium bears closely-set erect hairs at its most prominent part.

♀. The teeth of the front tibia are blunt, and the pygidium is conically produced to a point above the extremity.

Length, 13–14 mm.; breadth, 6–7 mm.

United Provinces: Kumaon.

Type in the British Museum; co-types in the Agricultural Research Institute, Pusa.

Taken in June in the Government Gardens, where it was found, in association with *A. versutus*, devouring the leaves of vine, fig, apple, pear and plum at night.

375. **Adoretus punjabensis**, sp. nov. (Plate IV, figs. 35 & 36.)

Uniform dark red-brown, sometimes with a very feeble coppery lustre upon the anterior part; evenly and rather closely clothed with minute decumbent grey setæ.

Elongate-oval and convex, rather broad, finely punctured and not shining. The head is moderately large, rather finely and closely granulated, with the clypeus semicircular. The pronotum is finely and closely rugose (a little less closely in the middle), with the sides strongly rounded, the front angles almost right angles and the hind angles obtuse but not rounded. The elytra are finely but not closely punctured, some of the punctures forming double lines, and the entire surface is microscopically

rugulose and opaque ; there are no elevated costæ. The pygidium is finely rugose and clothed with fine setæ arranged in two lateral patches uniting in the middle, leaving bare patches at the base and apex. The legs are stout, the front tibia armed with three strong, nearly equidistant teeth ; the claws very unequal, the longer front and middle ones very minutely cleft, and the shorter claw of the hind foot much less than half the length of the other.

♂. The eyes are a little more prominent than in the female and the cleavage of the longer front and middle claws is extremely minute.

Length, 12–13·5 mm. ; breadth, 6–6·5 mm.

PUNJAB : Multan (*O. A. Smith*, Dec.), Peshawar.

Type in the British Museum ; co-type in the Bombay Natural History Society's collection.

The arrangement of the clothing of the pygidium in two masses is peculiar. The species is closely similar to *A. horticola*, but a little less narrowed in front.

376. Adoretus mus. (Plate V, fig. 35.)

Adoretus mus, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 591.

Dark brown, with the head and thorax nearly black, and the femora and abdomen beneath generally yellow.

It is a very small, narrow-bodied species, moderately thickly clothed with a rather rough grey pubescence, with intermingled erect hairs, the pygidium entirely clothed with long erect hair. The head is finely and closely rugose, the clypeus rather large and semicircular. The pronotum is moderately closely punctured, the front angles slightly and the hind angles very obtuse. The elytra are rugosely punctured and devoid of costæ and of lateral carinæ. The front tibia bears three nearly equidistant teeth, the uppermost feeble and placed near the middle ; the longer claw of the front and middle tarsi is minutely cleft, and the shorter claw of the hind tarsus is less than half the length of the longer one. The antennæ are long, the third, fourth, and fifth joints nearly equal in length, the sixth about twice as long, and the seventh minute.

♂. The antennal club is very long.

I have not seen a female.

Length, 5·5–6 mm. ; breadth, 3 mm.

CEYLON : Diyatalawa (*T. Bainbrigge Fletcher*, Sept.)

Type in the British Museum.

377. Adoretus distinguendus. (Plate V, figs. 38 & 39.)

Adoretus distinguendus, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 598.

Testaceous, with the tarsi, head, and an ill-defined patch on each side of the middle line of the pronotum reddish ; fairly

closely clothed with uniform short setæ, except upon the pygidium, which bears rather long erect hair.

It is elongate, rather parallel-sided, and depressed. The eyes are large and prominent, the head closely granulated, except upon the vertex, which is strongly punctured, and the clypeus is short and transverse. The pronotum is very short, strongly and closely punctured, strongly rounded at the sides, with the front angles nearly right angles and the hind angles entirely rounded off. The scutellum and elytra are strongly and closely punctured, the costæ of the latter moderately distinct. The antennæ are 10-jointed, joints 3 to 7 regularly diminishing in length. The front tibia bears three strong teeth, the second nearer to the terminal one than to the third, and the longer claw of the front and middle feet is cleft.

Length, 12 mm.; breadth, 5 mm.

Burma: Tharrawaddy (*G. Q. Corbett*).

Type in the British Museum.

It is closely related to *A. cribratus*, White, and *A. birmanus*, but differs from both in having the hind angles of the pronotum completely rounded off. The pronotum is also less densely punctured than that of *A. cribratus*.

I have seen two males only. One of them is in Mr. H. E. Andrewes' collection, the other has been given by him to the National Collection.

378. Adoretus erythrocephalus.

Melolontha erythrocephala, Fabricius, Spec. Ins. i, 1781, p. 40; Oliv., Ent. i, 5, 1789, p. 41, pl. vii, f. 80.
Anomala erythrocephala, Burm., Handb. Ent. iv, 1, 1844, p. 531.
Adoretus brahmanus, Ohaus, Deutsche Ent. Zeits. 1914, p. 479, fig. 10 (new syn.).

Pale testaceous yellow, with the head and tarsi red-brown, and the vertex black on each side. It is rather shining above and evenly clothed with minute and not very dense pale setæ.

The form is broad, ovate and convex. The clypeus is not large, rather coarsely granulated, with the front margin semicircular and strongly reflexed. The pronotum is very short, broad, and coarsely punctured, with the sides rounded, the front angles not very sharp and the hind angles rounded but not quite obsolete. The scutellum bears large punctures, and the elytra are strongly and moderately closely punctured, with two narrow discoidal costæ and a humeral one which is rather broad behind; the epipleural fold becomes indistinct before the middle of the elytral margin. The pygidium and lower surface are moderately shining and not densely setose. The front tibia bears three sharp teeth, the two lowermost long and the third rather minute; the larger claw of the front and middle feet is minutely cleft.

♂. The pygidium is large and convex, and clothed with erect but not long hair.

Length, 9–9·5 mm.; breadth, 4·5–5·5 mm.

MADRAS: Coromandel (according to Fabricius); CEYLON: Colombo (*Dr. A. Willey*).

Type in the British Museum; that of *A. brahmanus* in Dr. Ohaus' collection.

The type is a female without legs. A second specimen in the British Museum without definite locality is a male. The species has a resemblance to *A. renardi*, Brenske, but the elytra are without the wide opaque epipleuræ which characterize the latter.

Ohaus gives only the vague "Ostindien" as the habitat of his *A. brahmanus*.

379. **Adoretus bicolor.**

Adoretus bicolor, Brenske, Ann. Soc. Ent. Belg. xxxvii, 1893, p. 142.
Adoretus caliginosus, var. *bicolor*, Brenske, Ind. Mus. Notes, 1900, p. 38.

Bright reddish-yellow, with the pronotum reddish, and the head and tarsi rather deep red; closely clothed above and beneath with minute uniform decumbent setæ.

It is convex, oval and moderately elongate. The clypeus and forehead are coarsely granulated, the former semicircular, with a strongly reflexed margin. The pronotum is densely but not very minutely punctured; the sides are strongly rounded, with the front angles rather acute and the hind angles rounded off. The elytra are strongly and closely punctured, with the costæ distinct and the epipleuræ not developed. The pygidium is clothed with erect but not very long setæ. The front tibia is armed with three strong equidistant teeth, the longer claw of the front and middle feet is minutely cleft, and the shorter claw of the hind feet is about half as long as the longer. The antennæ are 10-jointed.

♂. The clypeus is rather smaller than that of the female.

Length, 10–11 mm.; breadth, 5–6 mm.

SIKKIM: Kurseong; BENGAL: Sarda (*F. W. Champion*), Calcutta (*Simson*), Pusa (*T. Bainbrigge Fletcher*, June); CENTRAL PROVINCES: Jabalpur; BOMBAY: Surat (*H. Maxwell Lefroy*, June); MADRAS: Berhampur (*E. T. Atkinson*), Bangalore, 3000 ft. (May), Coimbatore (April), Kodumur, Kurnool (July).

The type (a single specimen from Kurseong) cannot be found either in Brenske's collection (now the property of Capt. Moser) or in the Royal Museum at Brussels. I have seen, however, specimens described by Brenske under the same name (but treated as a variety of *A. caliginosus*) in the Indian Museum. It was apparently this insect which was figured at the same time (Plate IV, figs. 1 & 2), but with the name of *A. bangalorensis*, the labels having been transposed.

380. **Adoretus decanus.**

Adoretus decanus, Ohaus, Deutsche Ent. Zeits. 1914, p. 489, fig. 23.

Bright testaceous yellow, with the forehead and vertex of the head, the pronotum (except the lateral margins), and a broad

sutural stripe upon the elytra, a little dilated round the scutellum, very dark brown or black; the clypeus, the extremities of the tibiæ and the tarsi are dark red.

It is elongate-oval in shape and moderately convex, with a rather dense clothing of uniform decumbent setæ. The head is not very large, finely and densely granular, with the eyes rather far apart and the clypeus broadly rounded. The pronotum is very finely and densely punctured, with the sides strongly rounded, the front angles nearly right angles and the hind angles very obtuse. The scutellum is finely and densely punctured, and the elytra strongly and confluently, with scarcely perceptible costæ. The pygidium is finely punctured and clothed with erect, not very long, hairs. The legs are rather slender, the front tibiæ armed with three sharp teeth, the uppermost one a little nearer to the second than that is to the first; the longer front and middle claws are bluntly toothed at the base and minutely cleft at the tip, and the shorter hind claw is very strongly curved and less than half the length of the other.

♂. The longer claw of the front and middle feet is very deeply notched a little beyond the base and very minutely cleft at the tip.

Length, 8·5–9·5 mm.; breadth, 4–4·5 mm.

Central Provinces: Nagpur, 1000 ft. (*E. A .D'Abreu*, June); Bombay: Surat (*H. Maxwell Lefroy*, July), Belgaum (*H. E. Andrewes*).

Type in Dr. Ohaus' collection.

This species very closely resembles *A. suturalis*, Arrow, but the pronotum is more densely punctured and the head of the male is scarcely different from that of the female.

381. **Adoretus suturalis.** (Plate IV, figs. 28 & 29.)

Adoretus suturalis, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 592.

Bright yellow, with the elytral suture, and usually also the forehead and the middle of the pronotum, black or dark brown, the sutural line broad and dilated around the scutellum. The dark patches of the head and thorax are sometimes divided into two collateral masses.

It is elongate-oval, moderately convex, strongly but not densely punctured, somewhat shining, and moderately densely clothed with fine grey setæ, not closely decumbent. The clypeus and forehead are coarsely granulated, the pronotum deeply but not densely punctured, with the sides strongly rounded, the front angles nearly right angles, and the hind angles very obtuse. The elytra are strongly punctured, with the costæ indistinct and the epipleuræ not developed. The pygidium is clothed upon its apical part with long erect hair. The front tibia bears three sharp teeth, the uppermost rather nearer to the second than that is to the first; the longer claw is minutely cleft on the front and middle

feet, and the shorter claw of the hind foot is extremely small. The antennæ are 10-jointed, joints 3–6 elongate.

♂. The clypeus is narrow and slightly flattened at its front edge, and the eyes are very prominent.

♀. The clypeus is semicircular.

Length, 7·5–9 mm.; breadth, 4–4·5 mm.

CEYLON: Wellawaya (*E. E. Green*, Nov.), Diyatalawa (*T. B. Fletcher*, Nov.), Kelani Valley, near Colombo (*W. Braine*), Anuradhapura (low country, Oct., Indian Museum).

Type in the British Museum.

382. **Adoretus lasiopygus.** (Plate V, fig. 36.)

Adoretus lasiopygus, Burm.,* Handb. Ent. iv, 2, 1855, p. 530.
Adoretus cardoni, Brenske,* Ann. Soc. Ent. Belg. xxxvii, 1893, p. 141; id., Ind. Mus. Notes, 1898, pl. xi, fig. 4.

Dark brown, becoming lighter upon the clypeus, scutellum, sides of the pronotum and elytra, as well as on the pygidium, the lower surface and the legs. It is rather densely clothed with grey decumbent setæ, intermixed with a few long erect hairs, and with the pygidium clothed with rather long erect hairs.

It is elongate-oval in shape. The clypeus and forehead are densely granulated, the former semicircular, with the margin strongly reflexed; the vertex is strongly punctured. The pronotum is strongly and moderately closely punctured, with the sides strongly rounded, the front angles blunt and the hind angles very obtuse. The scutellum is closely punctured, and the elytra densely and confluently, with the costæ indistinct. The pygidium is coriaceous and not distinctly punctured. The antennæ are 10-jointed, joints 3 to 7 regularly diminishing in length. The front tibia is tridentate, the uppermost tooth minute and rather nearer to the second than that is to the first, and the longer claw of the front and middle feet is cleft.

♂. The clypeus is small, the longer claw of the front and middle feet very minutely cleft, and the pygidium large.

Length, 9·5–12 mm.; breadth, 5–6 mm.

UNITED PROVINCES: Allahabad (*B. Lord*, Aug.); NEPAL; SIKKIM: Mungphu (*E. T. Atkinson*); ASSAM: Tejpur, Mangaldai Distr. (*S. W. Kemp*, Oct.); BENGAL: Tetara, Calcutta, Khulna (Apr., Ind. Mus.), Sarda (*F. W. Champion*), Ranchi (*Irvine*), Tinpahar and Rajmahal (*N. Annandale*, July), Pusa (*H. M. Lefroy*, July, Aug.); MADRAS: Coimbatore, S. Arcot, Madras, Godavery Distr. (*T. V. Ramakrishna*, Sept.), Bellary Distr. (*T. Bainbrigge Fletcher*, Sept.), Trichinopoli (*du Breuil*); CEYLON: Anuradhapura (*N. Annandale*, Oct.).

Type in the Halle Museum; that of *A. cardoni* in Capt. Moser's collection. Co-type of *A. lasiopygus* in the Geneva Museum.

In a southern race found in Ceylon and of which I have seen a series (in the British Museum and M. René Oberthür's collection)

taken by Castets in Trichinopoli, the colour is almost uniformly dark above, only the sides of the pronotum being a little paler.

This is an exceedingly abundant species in many parts of India and is the one referred to in Mr. T. B. Fletcher's "Some South Indian Insects" by the incorrect name of *Adoretus ovalis*. It is there stated to cause serious injury by devouring the leaves of the grape-vine and mango. Specimens sent from Pusa were taken upon wild nettles, sugar-cane, *Phaseolus radiatus*, etc., so that the mature insects are apparently general feeders. At Begum Serai, in Bengal, it is stated to have done serious damage to vines, attacking the fresh shoots after having absolutely stripped the plants of every leaf. Its depredations are committed by night, and during the daytime it may be found hiding in numbers just beneath the surface soil in the neighbourhood of the plants attacked.

383. **Adoretus versutus.** (Plate V, fig. 42.)

Adoretus versutus, Harold, Col. Hefte, v, 1869, p. 124; Scott, Trans. Linn. Soc. xv, 1912, p. 235, pl. xii, figs. 10–12.
Adoretus vestitus, Boh., Resa Eugen. 1858, p. 56; Ohaus, Entom. Blätt. viii, 1912, p. 220.
Adoretus bangalorensis, Brenske,* Ind. Mus. Notes, v, 1900, p. 38.
Adoretus vitiensis, Nonfr., Deutsche Ent. Zeits. 1891, p. 268.
Adoretus insularis, Fairm., Ann. Soc. Ent. Belg. xli, 1897, p. 105.

Reddish chestnut, with the forehead and pronotum, except the sides of the latter and sometimes a median line, dark and evenly but not very densely clothed with grey decumbent setæ.

Fig. 73.—*Adoretus versutus*, ♂.

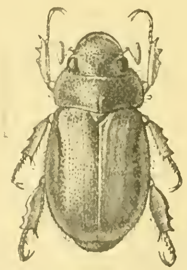

Fig. 74.—*Adoretus versutus*, ♀.

It is moderately broad and convex. The clypeus is coarsely rugose, and the forehead and vertex are coarsely punctured, the latter rather sparingly in the middle, where it is shining, and more closely at the sides. The pronotum is also shining in the middle, where it is coarsely but sparsely punctured and thinly setose, both punctures and setæ being closer at the sides. The front angles are rather acute, the hind obtuse but distinct. The scutellum is strongly punctured, but smooth at the apex,

and the elytra strongly and densely, with the costæ distinct but narrow. The pygidium is clothed with not very close or long hair, which is erect near the apex. The front tibia is armed with three strong acute teeth, the longer claw of each foot bears an angular lamina at the base and on the front and middle feet is slightly cleft. The shorter hind claw is rather more than half the length of the other.

♂. The eyes are large, and the clypeus small and transverse. The pronotum is less convex than in the female and rather less shining, and the pygidium is distinctly bare at the apex. The longer front and middle claws are exceedingly minutely and unequally cleft, and the middle one bears an obtuse tooth before the middle of its inner edge, so that it appears as if notched near the base.

♀. The body is broader and more convex, and generally larger, than in the male. The clypeus is semicircular and rather large, and the eyes are less large and prominent. The pronotum is very shining, with large but very scanty punctures and few setæ except at the sides. The longer front and middle claws are equally and more deeply cleft.

Length, 9–12 mm.; breadth, 5–6 mm.

United Provinces: Ranikhet (*H. G. Champion*, June to Aug.), Jolikote (May); Bengal: Pusa (*T. Bainbrigge Fletcher*, May), Sunderbans, Calcutta (*F. H. Gravely*, March), Darbhanga, Murshidabad, Goalbathan (*R. Hodgart*, July); Central Provinces: Jabalpur; Madras: Coimbatore (*T. V. Ramakrishna*, June), Bellary, Seruguppa (*T. V. Ramakrishna*, July), Trichinopoli (*J. Castets*); Ceylon: Dikoya, 4000 ft. (*G. Lewis*, Feb.); Malay Peninsula; Java; Fiji Is.; Samoa; Tongatabu; Mauritius; Seychelles Is.; St. Helena.

The figures in Ind. Mus. Notes, 1900, pl. iv, supposed to represent this species under the name of *Adoretus bangalorensis*, Brenske, appear to have been drawn from *A. bicolor*, Brenske, and *vice versa*, the labels of the two insects having been transposed in the Indian Museum.

The name *vestitus* cannot be used, having been previously given by Reiche to another species of *Adoretus*.

This extremely common and widely-distributed species seems to have a partiality for rose-leaves, but Mr. Gravely has also found it in large numbers feeding upon Cannas and *Lagerstrœmia* in Calcutta; in Samoa it is found to be a pest of cacao, and it is also reported as injurious to vines. At Pusa it has been found underground in an indigo-field and also at the roots of oats in May; at Jolikote it was taken at the same time of year upon apple seedlings and also on a loquat tree. Like most species of the genus it lies hidden by day, and feeds and flies by night. In Samoa larvæ are found at all times of the year at the roots of grasses and other plants. This beetle and the damage caused by it in Samoa is the subject of a special report by K. Friederichs in Zeits. Wissen. Insectenbiol., Berlin, x, 2, 1914, pp. 41–47.

384. Adoretus latirostris.

Adoretus latirostris, Ohaus, Deutsche Ent. Zeits. 1914, p. 496, fig. 30.

Very dark brown, with the sides of the pronotum, the scutellum, the antennæ, femora, tibiæ and sternum testaceous, and clothed very densely with fine uniform grey pubescence.

It is elongate-oval and not very convex. The clypeus is large, nearly semicircular, and finely and densely granulated, with the margin strongly reflexed; the forehead and vertex are finely and closely punctured. The pronotum is also finely and densely punctured, with the sides straight in front, strongly rounded behind, the front angles rather acute and the hind angles almost rounded off. The scutellum is finely and closely punctured, and the elytra densely, with rather indistinct costæ. The pygidium is clothed with uniform, erect, but not very long hair. The legs are rather slender; the front tibia is armed with three very strong teeth, the uppermost nearer to the second than that is to the first; the longer claw of the front and middle feet is minutely cleft, and the shorter hind claw extremely short. The rostral part of the labrum of this species is very broad, flat and shining.

♂. The eyes are large and prominent, and the longer front and middle claws are extremely minutely cleft at a distance from the apex.

♀. The head is large, the clypeus very large and rather parabolic, and the eyes relatively small. The rostrum is much broader than in the male.

Length, 10·5 mm.; breadth, 5 mm.

BOMBAY: Belgaum (*H. E. Andrewes*); MADRAS: Nilgiri Hills (*Sir G. F. Hampson*).

Type in Dr. Ohaus' collection or that of the Berlin Entomological Museum.

A single specimen remaining in Mr. Andrewes' collection is from the same source as the type, which was not returned by the late Dr. Kraatz when lent to him by Mr. Andrewes for determination many years ago.

385. Adoretus infans. (Plate V, fig. 41.)

Adoretus infans, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 590.

Pale testaceous, with the head, pronotum, and tarsi reddish, strongly and closely punctured above, and thickly clothed with fine, rather long, grey decumbent hairs, interspersed with a few longer erect hairs.

It is elongate and moderately convex, with a large head, very prominent eyes, and semicircular clypeus, which is closely granulated. The forehead and pronotum are deeply and closely punctured, the sides of the latter straight in front and the angles right angles, strongly rounded behind and the angles very obtuse. The elytra are strongly and closely but not rugosely punctured, the

costæ rather indistinct and the epipleuræ undeveloped. The pygidium is clothed with long erect hair. The front tibia bears three sharp but not strong equidistant teeth; the longer claw is minutely cleft in the front and middle feet, and the shorter claw of the hind foot is much less than half the length of the longer. The antennæ are 10-jointed, joints 3 and 6 longer than 4 and 5.

♂. The body is much narrower in shape, the eyes larger, and the clypeus smaller, than in the female.

Length, 8·5–10 mm.; breadth, 4–4·5 mm.

CEYLON: Eppawela, North Central Prov. (*E. E. Green*, Sept.).

Type in the British Museum.

386. **Adoretus feminalis.** (Plate V, fig. 44.)

Adoretus feminalis, Arrow, Ann. Mag. Nat. Hist. (8) xiii, 1914, p. 590.

Adoretus infuscatus, Ohaus, Deutsche Ent. Zeits. 1914, p. 483, fig. 15 (new syn.).

Brown, with the sides of the pronotum and the sides or the whole of the elytra paler.

It is rather short and ovate, and uniformly clothed with moderately dense short greyish setæ. The clypeus is semicircular and granulated and the eyes are not large; the forehead is strongly and rather rugosely punctured; and the pronotum is short, moderately closely and finely punctured, with the front angles right angles and the hind angles rounded off. The scutellum and elytra are closely and distinctly punctured, the costæ upon the latter are narrow and distinct, and the epipleuræ are not continued behind. The pygidium is shallowly pitted or punctured and clothed with setæ, which are erect only at the apical part. The sides of the metasternum are strongly punctured. The front tibia is armed with three acute equidistant teeth, the longer claw of the front and middle feet is cleft, and the shorter claw of the hind foot is more than half the length of the other. The antenna consists of ten joints, the third to the sixth progressively diminishing in size.

♂. The clypeus is rather small, and the longer front and middle claws are very minutely cleft.

Length, 9·5–10 mm.: breadth, 5·5 mm.

CEYLON: Kandy (*Gilles*), Peradeniya (*E. E. Green*, Nov.), Colombo (*E. E. Green*, March).

Type in the British Museum.

387. **Adoretus bengalensis.** (Plate V, fig. 49.)

Adoretus bengalensis, Brenske,* Ann. Soc. Ent. Belg. xxxvii, 1893, p. 142.

Dark brown, with the forehead almost black, the legs pale, and the posterior part of the outer margins of the elytra and an elongate patch upon the apical callus vaguely reddish. It is rather thickly clothed above and beneath with uniform decumbent greyish hair.

It is long, narrow and parallel-sided. The clypeus is rather

large, very shining and not closely punctured, semicircular in shape, with the margin strongly reflexed; the eyes are large and prominent, and the forehead densely punctured. The pronotum is densely punctured, with the sides curved and all the angles indicated but obtuse. The elytra are closely and rather shallowly pitted, and the costæ are narrow and moderately distinct. The pygidium is moderately punctured and closely clothed with hair, which forms a moderately long outstanding tuft at the extremity. The antennæ are 10-jointed. The front tibia is armed with three acute teeth, which occupy nearly half its length, the second rather nearer to the third than to the first; the tarsi are moderately long and slender, and the shorter claw of the hind foot is reduced to a vestige.

♂. The longer front and middle claws are bent and thickened towards the end and only very minutely cleft.

Length, 8 mm.; breadth, 4–4·5 mm.

BENGAL: Konbir, Tetara (type); BOMBAY, North Kanara (*T. R. D. Bell*).

Type in Capt. Moser's collection.

388. **Adoretus pusillus**, sp. nov. (Plate V, fig. 47.)

Dark brown, with the clypeus, the sides of the pronotum and elytra, and the humeral and apical calli rather vaguely paler; the sternum and legs (except the tarsi) are yellowish, and the abdomen is generally darker beneath.

It is elongate-oval and moderately convex, closely clothed above with fine and rather uniform grey hair, the elytra having extremely few longer erect hairs. The head is moderately large and closely granulated; the eyes are prominent, and the clypeus semicircular, with strongly reflexed margins. The pronotum is strongly, closely and rather confusedly punctured, with the sides well rounded, the front angles nearly right angles and the hind angles very obtuse. The elytra are confluently punctured and have moderately well developed costæ. The pygidium is minutely rugose and clothed with fine decumbent hair, which is only a little longer at the apex. The front tibia is armed with three sharp, nearly equidistant teeth, and the longer front and middle claws are cleft at the tip.

♂. The longer front and middle claws are dilated towards the end and excised near the base.

Length, 8–8·5 mm.; breadth, 4 mm.

BOMBAY: Kasana (July), Igatpuri (July).

Type in the British Museum; co-types in the Agricultural Research Institute, Pusa.

Exceedingly like *A. bengalensis*, Brenske, and almost identical in size, shape and colouring, but rather more strongly punctured, the punctures of the pronotum, in particular, being larger and more distinct. The costæ are also more distinctly developed upon the elytra; the elytral clothing is more uniform and the erect setæ are very few.

389. **Adoretus fusciceps**, sp. nov. (Plate V, figs. 30 & 31.)

Testaceous yellow, with the clypeus dark red, the forehead and vertex nearly black, the pronotum with an indefinite reddish patch on each side, and the tarsi reddish.

It is oblong, rather elongate, moderately convex, and very closely and evenly clothed all over with very fine decumbent grey hairs. The head is moderately large, with the clypeus rather short, closely studded with minute granules and its front margin evenly rounded; the forehead and vertex are densely rugosely granulated. The pronotum is finely and densely punctured, with the sides straight in front, the front angles acute and the hind angles completely rounded away. The scutellum is closely punctured, and the elytra are closely pitted, the intervals minutely punctulated and the costæ rather well marked; the epipleuræ are not complete. The pygidium is closely clothed with very short and almost uniform hairs. The front tibia is armed with three very strong but not sharp teeth, the longer front and middle claws are minutely cleft at the extremity, and the shorter hind claw is about half the length of the longer one.

♂. The pygidium is very convex and the longer front claw very unequally cleft.

Length, 11·5 mm.; breadth, 6 mm.

BURMA: Tharrawaddy (*G. Q. Corbett*).

Type in the British Museum.

This is extremely similar to *A. caliginosus*, Burm. It is a little less convex and cylindrical, and the head is rather larger in proportion. The prothorax is less distinctly darkened, but there is generally a vaguely darker patch on each side of the middle. The bifurcated ædeagus of the male enables it to be distinguished at once.

390. **Adoretus caliginosus.**

Adoretus caliginosus, Burm.,* Handb. Ent. iv, 1, 1844, p. 471.
Adoretus nudostriatus, Ohaus, Deutsche Ent. Zeits. 1914, p. 482, fig. 14 (new syn.).

Ferrugineous red or reddish testaceous, usually with the head and pronotum (or the middle of the latter) darker; the vertex of the head black. The entire surface is closely and evenly clothed with exceedingly minute decumbent grey setæ.

It is convex and cylindrical in shape, moderately elongate, with the head not very broad and the eyes of moderate size only. The head is densely granulated all over and the clypeus almost semicircular. The pronotum and scutellum are extremely finely and densely punctate-rugose, the former rounded at the sides, with the front angles acute and the hind angles entirely rounded off. The elytra are closely punctured and their costæ scarcely elevated, but fairly well-marked and not very narrow. The pygidium is clothed with setæ, which are erect but extremely short. The

antennæ are 10-jointed. The front tibia is armed with three sharp equidistant teeth; all the tarsi are rather slender, and the longer claw of the front and middle feet is cleft.

The two sexes are almost alike, except in the short pygidium and convex abdomen of the female.

Length, 10·5–11·5 mm.; breadth, 5·5 mm.

PUNJAB: Kangra Valley, 4500 ft. (*G. C. Dudgeon*, July); SIKKIM: Mungphu (*E. T. Atkinson*); BENGAL: Sarda (*F. W. Champion*); BOMBAY: Belgaum (*H. E. Andrewes*), Bandra (*Dr. Jaydkar*); MADRAS: Nilgiri Hills, 3500 ft. (*H. L. Andrewes*, April); BURMA: Rangoon (according to Ohaus).

The last locality requires confirmation.

Type in the Halle Museum.

Sometimes (probably only in very fresh specimens) the elytral striæ are marked by fine bare lines dividing the pubescence, as described in his *A. nudostriatus* by Ohaus, but these lines are evidently easily obliterated. That this is not a distinct form is shown by Ohaus' figure of the ædeagus, which is identical with that of Burmeister's type, which I have examined.

Species of uncertain position.

391. Adoretus brachypygus.

Adoretus brachypygus, Burm., Handb. Ent. iv, 2, 1855, p. 530.

"Testaceous, shining, slightly pubescent, with the vertex dark, the clypeus parabolically elongate. Pygidium of the ♀ short, the ventral part tumid. Length, 5 l.

Form and colouring as in *A. caliginosus*, but more shining, because the puncturation is lighter and the hairy clothing much sparser. Clypeus elongate parabolic. Vertex dark red-brown. Pronotum very pale reddish-yellow, very sparingly pubescent. Elytra with the usual slight costæ. Pygidium extremely short, but the last abdominal segment strongly convex, bent upwards. Front tibia with three strong teeth and some slight serrations above them."

India. Collected by Major Boys. Received from Mr. Melly.

Type in the Halle Museum.

Burmeister evidently did not know the male of this, and the name he has given it describes a constant feature of female *Adoreti*. Dr. Frey-Gessner, who is in charge of the Melly Collection at Geneva, has kindly sent me a male specimen supposed to be a co-type. Probably it was taken by Boys together with the type-specimen, but was retained by Melly and the female sent to Burmeister, who placed it in the Halle collection. There are also two males taken by Major Boys in the Hope Collection at Oxford, which agree in most respects with the female type, but belong to a different species from the Geneva specimen. It is therefore doubtful which is Burmeister's species.

392. **Adoretus progrediens.**

Adoretus progrediens, Ohaus, Deutsche Ent. Zeits. 1914, p. 489 fig. 22.

♂. "Most nearly related to *A. simplex*, Sharp, but smaller; reddish yellow, slightly shining, coarsely punctured and quite sparingly clothed with short grey hairs; the head rather brownish, with a slight metallic lustre. Clypeus semicircular, with the brown margin a little produced and more elevated in the middle, the surface sparingly transversely rugose and thinly hairy; clypeal suture a little produced backwards in the middle; forehead and vertex covered with coarse short transverse impressions derived from confluent ocellate punctures, thinly hairy, with only the middle of the vertex smooth and shining. Thorax only twice as broad as long, with the front margin produced forwards and the hind margin produced backwards in the middle, the sides dilated in the middle; the rectangular front angles slightly produced, the very blunt hind angles scarcely rounded, the marginal stria well developed all round, and closely and shortly hairy; the upper surface with sparse horseshoe-shaped punctures, each bearing a quite short grey hair. Upon the elytra the costæ are prominent, the primary rows of punctures regular, and the punctures in these and in the intervals coarse, deeply impressed and at the bottom black surrounded with brown; the upper surface thinly clothed with short hairs, which spring, not from the deep punctures, but from the smooth surface; epipleuræ short and narrow, with a narrow membranous margin. Propygidium with a rather produced hind margin, from which arises a thick fringe of hairs. Pygidium rather closely and finely rugose, rather prominent before the apex and with longer hairs there. Legs rather strong: front tibiæ with three equidistant teeth, middle and hind tibiæ each with two obsolete sharp spinose carinæ.

"*Length*, 9 mm.; breadth, 4 mm.

"BENGAL."

Type in Dr. Ohaus' collection.

This species is very closely related to *A. incurvatus*, Ohaus.

393. **Adoretus silonicus.**

Chætadoretus silonicus, Ohaus, Deutsche Ent. Zeits. 1914, p. 493, fig. 27.

"Elongate-oval, ♂ parallel-sided, ♀ a little dilated, rather convex; above reddish testaceous, with the head and thorax dark brown, the lower surface entirely bright yellow, including legs and antennæ, or dark in the middle of the sternum and abdomen. Clypeus semicircular in ♂ and ♀, reddish, with the black margin finely reflexed, the clypeal suture straight, the surface covered with moderately close and fine granules, behind which short white hairs arise; the forehead closely and confluently, the vertex less closely, covered with annular punctures, with greyish-white hairs directed backwards, and isolated longer yellow bristles near

the eyes. Thorax rather more than twice as broad as long, with the hind margin straight, the front margin strongly prominent in the middle, the sides dilated in the middle, the blunt hind angles slightly rounded, the right-angled front angles in the ♂ scarcely, in the ♀ more distinctly, produced; the surface closely covered with large annular punctures and rather erect greyish-white hairs, with longer erect bristles upon the anterior part of the disc and in the encircling marginal furrow. The primary rows of punctures are rather distinct upon the elytra, the primary costæ almost obsolete, in the ♀ more so than in the ♂; the surface is everywhere closely and confluently punctured, with short transverse rugæ between; the apical calli only are smooth and bare, the remaining surface rather thickly clothed with white hairs, amongst which, upon the primary costæ, are long erect white bristles; the epipleuræ are very short and narrow. Pygidium moderately long and convex, closely, finely and rugosely punctured, clothed with erect hair, and slightly prominent before the apex, which in the ♂ is broadly truncated. Legs rather slender, front tibiæ tridentate, with the apical tooth exceedingly long in the ♀ and the basal one almost obsolete in the ♂, the middle tibiæ scarcely, and the hind tibiæ a little, dilated, each with a sharp spinose carina. Rostrum quite indistinctly, shortly and finely carinate. Antennal club elongate in the ♂.

"*Length*, 8–9 mm.; breadth, 3·5 mm.

"CEYLON: Kandy."

Type in Dr. Ohaus' collection.

394. **Adoretus gymnotopus.**

Chætadoretus gymnotopus, Ohaus, Deutsche Ent. Zeits. 1914, p. 498, fig. 32.

"Nearly related to *A. cribratus*, White, but smaller, more strongly dilated behind and more convex. Clypeus longer than in *A. cribratus*, almost semicircular, with a highly reflexed black margin, closely covered, like the head, with small ocellate and confluent punctures. Thorax more sparingly covered with larger ocellate punctures. Elytra with slightly prominent costæ, and everywhere closely covered with smaller confluent ocellate punctures and fine transverse corrugations; only a few small erect white bristles upon the primary costæ; epipleuræ short and narrow. Pygidium rather long, with the apex rounded, closely punctured, thickly clothed with long greyish-yellow hairs, which are longer in the middle and form a tuft, between which and the apex lies a round smooth shining spot. Legs slender, front tibiæ with three sharp teeth, the middle and basal ones approximated; middle tibiæ slender, with two slight sharp spinose carinæ; hind tibiæ only a little thickened, with one slight, short spinose carina. Rostrum with a short fine carina; labrum not carinate.

"*Length*, 9 mm.; breadth, 4·5 mm.

"BENGAL: Barway, Chota Nagpur."

Type in Dr. Ohaus' collection.

395. Adoretus nietneri.

Lepadoretus nietneri, Ohaus, Deutsche Ent. Zeits. 1914, p. 507.

"Elongate-oval, moderately convex, blackish brown, with reddish yellow legs, closely punctured all over, not very shining, so thickly clothed with short white or greyish-white decumbent scales that the surface is entirely covered. Clypeus semicircular, with slightly reflexed margin; clypeal suture straight. Front and hind margins of the pronotum almost straight, the sides slightly widened in the middle, the blunt hind angles not rounded, the nearly right-angled front angles slightly produced. On the elytra the primary costæ are slightly raised and appear in a certain light a little paler than the intervals; the scales are everywhere rather evenly distributed, but upon the apical callus there is a longer tuft of hairs, which is broader than usual; outside of and before this hair-tuft is a blackish-brown bare spot, sometimes absent; epipleuræ almost absent. Pygidium with a small eminence before the extremity, the area between the two bare, the eminence and its immediate neighbourhood with long erect whitish-yellow scaly hairs. Legs short and stout; front tibiæ with three sharp teeth, middle and hind tibiæ with two short oblique obsolete spinose carinæ.

"The paramera of the ædeagus are united as far as the apices and closed above, so that the aperture is on the ventral side.

"*Length*, 10 mm.; breadth, 5 mm.

"Ceylon (*Nietner*)."

Type in Dr. Ohaus' collection.

Subfamily DESMONYCINÆ.

This subfamily is formed for a single insect, of which only the male is yet known. It has so far been found only on a single occasion by the late skilful and successful collector, Doherty, but for whose premature death in East Africa our knowledge of tropical insect-life would undoubtedly have advanced much more than it has done. Of the habits of this isolated insect nothing whatever is known. From the greatly developed antennal club of the male, the character of the organs of the mouth, and the fact that half a dozen specimens taken by Doherty are all of the same sex, it is probable that the adult life is short and the female has sluggish and retiring habits quite different from those of the male.

The structure of the head and mouth are very peculiar. The clypeus is strongly constricted between the points of insertion of the antennæ and divided in front into three diverging lobes, which are all curved upwards. The labrum is extruded as a narrow tongue or tubercle projecting between the long slender mandibles. This structure is entirely unlike anything found in any other subfamily of Pleurostict Lamellicornia. All the mouth-parts appear to be in a degenerate condition, the mandibles,

although long and sharp, being probably feeble and of no use as biting organs, while the maxillæ have completely lost all biting parts and are reduced to mere supports for the well-developed sensory palpi. The legs are slender and on the whole most like those of certain DYNASTINÆ, and the claws are simple and symmetrical, except that, as in some DYNASTINÆ, the inner front claw bears a broad lobe, peculiar no doubt to the male.

This curious form seems on the whole to resemble a Chilian genus, *Oryctomorphus*, more than any other known beetle. It has certain points of resemblance, for example, in the method of articulation of the front femur and tibia, to the PARASTASIINI, but the occurrence of four external teeth upon the tibia is unknown in any Ruteline, while the simple symmetrical claws of the four posterior feet connect it rather with the DYNASTINÆ, to which it is undoubtedly related. The lobed front claws of the male and the produced mandibles are shared with the two other subfamilies, but the shape of the clypeus and the conformation of the organs of the mouth are quite foreign to both these groups.

Although agreeing with *Peltonotus* in having the labrum extruded, the form of that organ is entirely different, and the correspondence probably implies nothing more than the retention by both of a primitive feature. In nearly every other respect the two genera are widely different.

Genus **DESMONYX**.

Desmonyx, Arrow, Ann. Mag. Nat. Hist. (7) xix, 1907, p. 355.

TYPE, *Desmonyx humeralis*, Arrow.

Range. Burma.

Body compact and hairy, with rather slender legs. Eyes not large, but very prominent. Clypeus very narrow at the base, dilating a little in front of the antennæ, trilobed in front, with the lobes curved upwards, the middle one sharp and the lateral ones rounded. Antennæ 10-jointed, the first joint clubbed, the 2nd globular, the 3rd to the 6th elongate, the 7th short, and the last three forming a club longer (in the male) than the footstalk. The labrum is extruded, forming a narrow finger-like process clothed with long hairs. The mandibles are long and narrow, tapering to a sharp point and strongly curved at the ends, which extend beyond the clypeus. The maxillæ are atrophied, without lobes or teeth, but with rather long 4-jointed palpi, the last joint large and fusiform. The labium is a simple rounded lobe, with the 3-jointed palpi placed near the extremity, their terminal joint large and fusiform. The pronotum is transverse, with the sides and base rounded, and the angles not sharp. The scutellum is large and nearly semicircular. The front coxæ are prominent and contiguous, the middle coxæ separated and the mesosternum elevated between them but not produced. The front tibia is armed with four external teeth at unequal distances, the upper-

most one very blunt and the others long and sharp. Near its articulation with the femur it is rather abruptly narrowed, leaving a projection which interlocks with the femur. The four posterior tibiæ are very spinose externally and clothed with very long hairs. The tarsi are rather slender, and the claws long and slender, those of the four posterior feet simple and equal.

The front tarsi of the male are rather thickened, the penultimate joint has a lobe beneath, and the claws are unequal, the inner one very widely cleft and its lower branch broad.

Only a single species is known.

396. Desmonyx humeralis.

Desmonyx humeralis, Arrow, l. c. p. 356.

Dark mahogany-brown, with the back of the head, the middle of the prothorax, the scutellum and the anterior part of the elytra, as well as the club of the antenna, black, and with two yellow spots near the anterior border of each elytron—one near the scutellum, and a rather smaller one a little behind and outside the first.

Fig. 75.—*Desmonyx humeralis,* ♂.

It is a small, shortly ovate insect, compactly built, with the entire surface, except the dorsal part of the elytra, clothed, although not very thickly, with erect hair. The upper surface is coarsely and rugosely punctured. The clypeus is finely rugose, broad and trilobed in front, strongly constricted at the base of the antennæ. The prothorax is coarsely punctured, channelled along the middle, broadly rounded at the base, with the front angles acute and the hind angles rounded. The scutellum is nearly semicircular and finely punctured. The elytra are coarsely punctate-striate, with the intervals rugose. The pygidium is minutely punctured and shining.

♂. The antennal club is very long; the last joint of the front tarsus is enlarged, the inner claw thickened and very widely cleft, and the fourth joint produced beneath the claw-joint; the other claws are simple, slender and equal.

♀ unknown.

Length, 9–10 mm.; breadth, 6 mm.

Burma: Ruby Mines (*W. Doherty*).

Type in the British Museum.

Subfamily EUCHIRINÆ.

This group consists of a very small number of species, peculiar to the East, which for their size and aspect are amongst the most striking of all beetles. Eleven in all are at present recognised, of which four are found in India, two more in adjacent regions, two in Southern China, one in the Philippine Islands, one (the first and best known) in the Malayan Islands of Ceram and Amboyna, and the last in Asia Minor and even so far westward as the environs of Constantinople. These insects have no very intimate relationship with any others dealt with in this volume, but present so curious a combination of features as to make their actual origin and affinities the subject of long-continued debate. In habits they resemble the Stag-beetles (LUCANIDÆ), feeding in the larval stage in and upon the decaying interiors of old tree-trunks, and when mature upon the sweet exudations from various trees.

The most striking characteristic of the group is the enormous elongation of the fore-legs in the males. This phenomenon occurs in most of the principal groups of Lamellicornia, and in a very marked degree in some DYNASTINÆ and CETONIINÆ, but in no other group does it attain the extreme development found in the EUCHIRINÆ, in well-developed specimens of which the fore-legs are much longer than the body. The femur, tibia, and (in *Propomacrus*, but not in *Euchirus*) the tarsus share in the elongation, the femur and tibia especially being very slender and distorted in strange irregular curves, which, in conjunction with various spines and short branches given off at irregular intervals and angles, produce the appearance of dry twigs, at least in the Indian and Malayan species. In *Propomacrus bimucronatus* and *P. davidi* the inner edge of the tibia carries a close fringe of golden hairs, and the mimetic resemblance is therefore absent, so that no adequate explanation of the phenomenon is supplied by the theory of protection afforded to the insects by the mimetic assimilation to their environment; although it seems probable that the particular forms assumed by these extraordinary limbs in the majority of the species may be accounted for in this way. A further difficulty is presented by the fact that the modification is confined to the male sex—the one which less requires protection for the sake of the continuance of the species, its effective life being shorter than that of the female.

The unwieldy fore-legs have their joints so formed as to be capable of an altogether exceptional degree of movement, allowing the femora to be thrown back over the sides of the elytra and the tibiæ doubled upon them, so that in the position of rest the limbs are packed closely against the body. According to A. R. Wallace the beetles are sluggish (he referred to *Euchirus longimanus*) and "drag themselves lazily along by means of their immense fore-legs." A feature of some importance is the complete absence from the front tibia of the male of the movable terminal spine or

spur found in the female, as it is in both sexes of nearly all other Lamellicornia. In the latter sex the fore-legs are of normal length, with the tibia rather flat and broad, and bearing at the outer edge an indefinite number of sharp teeth. The front coxæ are not perpendicular, as in the CETONIINÆ, but spread out transversely, like those of RUTELINÆ and MELOLONTHINÆ. They are nearly contiguous in the females, but strongly diverge in the males, so that a large gap is formed between them. The two hinder pairs of legs are moderately slender, the tibiæ furnished with numerous sharp spines pointing backwards, but not, as usual, arranged in transverse or oblique rows. In the females the ends of the hind tibiæ are rather expanded or trumpet-shaped, and the outer rims in both sexes are fringed with sharp spines. The front tarsi in both sexes are longer than the others, and the two basal joints of all are produced beneath into rather strong spines. These are especially developed in the females, but the males have in addition an array of rough horny projections upon the lower surface of the tarsi, which are not present in the females. Evidently the beetles have rather special clinging powers, but this may only be necessitated by their bulky form. The claws are strong, fixed and symmetrical, alike upon all the feet of male and female, and strongly toothed beneath near the middle, a form of claw only found in the foliage-feeding MELOLONTHINÆ amongst the other Lamellicornia. Between the claws is a well-developed pulvillus, bearing at the end two long sensory hairs.

It has been asserted (by von Heyden) that the long-legged individuals are the females and not the males, but this is entirely wrong. In addition to the various differences in the legs already mentioned, the former are distinguished by having all the tarsi shorter than in the males, the pygidium more protruding and not vertical, and by more or less pronounced differences in the shape of the pronotum, which is relatively shorter than that of the male in the genus *Euchirus*, and relatively longer in *Propomacrus*.

The head is not large, nor the eyes very prominent, but the clypeus is fairly well developed, rather hollowed out above, with a broad flat anterior face. The antennæ are very short, stout and compact, alike in both sexes, with the six joints between the scape and the three-jointed club very short and closely packed. There is a peculiarity in the club which I believe is shared with no other Pleurostict Lamellicorn and which, so far as I know, has never been noticed hitherto, even the various figures which have been published generally misrepresenting the actual structure. The two external lamellæ are hollowed on their inner faces and their edges meet, so that they completely enclose, except near its base, the middle lamella, which is smaller, shorter and thinner and no doubt forms the most sensitive and important part of the organ. A similar structure occurs in the Geotrupid genus *Bolboceras*, and it probably implies either special delicacy of the sensory surfaces of the antennal club, or some special risk of injury to those surfaces in the particular habits of the insects.

The organs of the mouth clearly indicate the liquid nature of the food taken by the mature beetles. There are no cutting or grinding parts, and the apparatus rather closely resembles that of the CETONIINÆ; but this in my opinion is due rather to convergent development than to any close relationship. The labrum is extruded, highly chitinous and fringed with hairs (not membranous and concealed, as in the CETONIINÆ and DYNASTINÆ); the mandibles are only chitinous externally, the inner half being completely membranous or leathery and thickly covered with hair, the hard chitinous part not extending to the tip, as in the CETONIINÆ. The maxilla consists of a single lobe, with two or three slight blunt teeth internally; it is almost covered with long hairs, which form a very long brush at the end. The labium is short, with a well-marked broad ligula, tufted on each side, and all the palpi are rather stout.

There is no production either of the prosternum or mesosternum, all but the front coxæ reach the middle line of the body, and the mesothoracic epimera do not ascend between the pronotum and elytra, as in the CETONIINÆ. The elytra are long, nearly covering the abdomen, and have fairly well-developed epipleuræ. The pygidium is rather small, and the abdomen consists of six segments beneath, divided by complete sutures.

The size of these creatures, as well as their elongate fore-legs, not unnaturally led the early systematists to associate them with the giant DYNASTINÆ, but they have none of the actual distinctive features of that group, and their mouth-apparatus and claws emphatically exclude them equally from that and from the RUTELINÆ. It has been said above that the organs of the mouth have a marked resemblance to those of the CETONIINÆ, and this led Burmeister to refer them positively to that group, declaring the genus *Inca* to be that most nearly related to them. But the general conformation of the body is very different from that characteristic of the CETONIINÆ, while the horny extruded labrum, the toothed claws, transverse front coxæ, and other features, are entirely alien to them. An actual comparison with the American genus *Inca* reveals extremely little real similarity. There remains the MELOLONTHINÆ, to which alone, as Klug and Erichson first recognised, the toothed claws assimilate them, and it is to those, as is now generally admitted, that they are actually most nearly allied. A careful comparison of any species of EUCHIRINÆ with a primitive Melolonthine genus, such as *Pachytricha*, will show no such dissimilarity in the structure of the mouth-parts, legs, or any other part, as appears on comparison with *Inca*. The large size and general peculiarity of appearance of the insects, rather than any particular structural features, have probably been responsible for their exclusion from this large and not very homogeneous group; but this exclusion is no doubt justified and the box-like form of the antennal club, hitherto unnoticed, may be regarded as an important diagnostic character of the subfamily.

No light upon this interesting little group has hitherto been

obtained, so far as I am aware, from the study of the immature stages. Happily a series of specimens of *Propomacrus bimucronatus* in all its stages exists in the British Museum. The larva has the familiar strongly curved form and is rather less elongated than those of the MELOLONTHINÆ and RUTELINÆ known to me, but more so than the larva of *Cetonia*. The legs, while longer than those of the latter, are much shorter than usual in the MELOLONTHINÆ, and the antennæ are also shorter, but with the penultimate joint produced into a strong tooth. The smooth terminal segment of the abdomen is about equal in length to the two preceding ones and much shorter than is usual, except in the CETONIINÆ, but it is completely divided by a transverse fold, instead of being entire, as specially characteristic of the latter group. (In the TRICHIINI, to which Burmeister referred these insects, a fold is traceable dorsally, but is not complete.) There is only a very thin clothing of fine hair, but the corrugated dorsal segments bear fairly close-set backwardly-directed spines. The ventral side of the last segment has a bare median line, on each side of which is a broad patch of evenly-distributed similar spines. The anal orifice is situated dorsally and is longitudinal, with a broad triangular flap covering its anterior end. The longitudinal position is exceptional, but is perhaps a primitive character, being found in LUCANIDÆ, PASSALIDÆ, TROGINÆ, and, according to Perris, in a genus of MELOLONTHINÆ, viz. *Triodonta*.

Beyond the facts that the larvæ feed upon decaying wood and the mature insects upon the sweet exudations from certain trees, we know practically nothing as to the habits of the EUCHIRINÆ. The only reference to those of an Indian species is, I believe, in a letter, dated the 28th July, 1847, from Capt. T. Hutton, of the East India Company, published in the 'Transactions of the Entomological Society' for that year. According to this, *Propomacrus macleayi* breeds in decaying oak trees (*Quercus incana*), and the beetle is a sap-feeder "and may be seen in company with crowds of stag-beetles sucking up the juice as it flows from wounds in the trees."

The cocoons of wood-fibre made by the larvæ of this species before pupation are depicted by M. Pouillaude in 'Insecta,' 1913, fig. 3. Dr. Ohaus has recorded that a variety of the same species inhabits Formosa, where its cocoons have been found in a decaying camphor-tree (Ent. Rundsch. xxx, 1913, p. 142).

P. bimucronatus has been observed at Constantinople breeding in an oak, Herr Abresch having found beetles on the point of emergence in the month of August in the rotten wood contained in a hole about five feet from the base of the tree (Stett. Ent. Zeit. 1851, p. 200). Dr. Heller found the same species in Northern Syria in a very different tree, *Cordia myxa*, L., known as "arbre à glu," because a kind of birdlime was prepared by the Arab inhabitants from its fruit. This tree having been introduced from regions farther East, Dr. Heller argues that the

beetle also is probably an importation from those regions, but this argument fails if, as it appears, the insect does not confine itself to a particular kind of tree. The beetles are said to frequent the tops of the trees, possibly attracted by the sticky berries referred to. *Euchirus longimanus*, according to Wallace, is invariably found in Amboyna feeding upon the exuding sap of the sugar-palm (*Arenga saccharifera*), which is tapped by the natives in order to provide a fermented drink (Wallace, 'Malay Archipelago,' 1890, p. 232, pl. 33).

Burmeister and subsequent writers, including Lacordaire, separated the Syrian and Eastern European "*Scarabæus*" *bimucronatus* of Pallas under the generic name *Propomacrus* from all the other known species of the group, which they associated together by the name of *Euchirus*, but, as pointed out by Deyrolle, this is quite an unnatural division. The two elongate Malayan species, *Euchirus longimanus* and *dupontianus*. in which the prothorax is smooth and narrow, and the front tibiæ of the male without teeth or processes, are obviously more closely related to each other than to any other, while *Propomacrus bimucronatus* (with *P. davidi*, Deyr.) has the same broad prothorax, with its toothed lateral margins, and general form as all the remaining species, the only difference of any importance being the occurrence of a thick hairy fringe upon the front tibia of the male. Burmeister enumerated as the grounds for separating *P. bimucronatus* the shape of the labrum, that of the clypeus, and the occurrence of teeth upon the front tibia of the male. The two latter of these distinctions are found by comparison of a sufficient number of specimens to have no substantial existence, and the first is so slight, consisting only in the presence or absence of an indentation varying in degree in different species, that it is now admitted that no importance can be attached to it.

M. Pouillaude, in a recent survey of the group, has again proposed the separation of *Propomacrus bimucronatus* and *davidi*, and the revival of the old name *Cheirotonus* for the Indian species and those most closely allied to them. The reasons for this he finds in the following points:—the green ground-colour of the latter, as opposed to the brownish tints of the two former. the projection of the front margin of the pronotum in the middle, and the absence of the hairy fringe of the male front tibia. Although in tabulating the species of *Cheirotonus* he recognizes as specific the degree of development of the minute anterior prominence of the pronotum, he has not noticed that in the type-species of *Cheirotonus* (*C. macleayi*, Hope) it is replaced by a slight indentation. The difference of colour is certainly fairly well marked in the known species, but is not absolute, *Propomacrus davidi* having a slight green lustre upon the elytra; and there may well be other species yet unknown by which this unimportant distinction will be further bridged. In fact these two minute differences, although of some value, in the absence of

any of greater importance, for grouping the species, would not by themselves be regarded as of generic value by any systematist. The hairy fringe to the tibia of the male therefore remains the only distinction of any real significance.

A character distinctive of one sex is in my opinion never a proper one on which to base a genus, as, apart from the serious objection that it affords no means of determining specimens of the other sex, experience shows that such characters are specific only and may be absent or totally different in forms with the closest possible relationship. On the other hand, when species from different regions are closely related their separation under different generic names, unless required for adequate reasons, is undesirable, as obscuring the important fact of geographical distribution which is conveyed by their union under a single name. The vast, almost unexplored, regions of Central Asia probably contain undiscovered species of these insects, which may be expected, like the Chinese *Propomacrus davidi*, to fill in the slight interval which separates the Syrian and Indian forms; but it is improbable that the number of recognized species will ever be so large that their inclusion in one genus will cause serious inconvenience.

The Malayan *Euchirus longimanus* and *dupontianus* differ from all the rest in the general shape of the body, especially the entirely different form of the prothorax; there is also a considerable divergence in the secondary sexual characters, as well as an important difference in the mouth, which seems to indicate a corresponding difference of habit, viz., the maxillæ are furnished with extremely well-developed sharp teeth, which in the other species are either absent or reduced to slight and probably functionless vestiges.

For these reasons the correct course seems to me to be that of Deyrolle, restricting the genus *Euchirus* to the two Malayan species, while treating all the remaining EUCHIRINÆ as forming a single genus, for which the name *Propomacrus* must be used.

Genus **PROPOMACRUS.**

Propomacrus, Newm., Entom. Mag. iv, 1837, p. 255; Burm., Handb. Ent. iii, 1842, p. 702; Lacord., Gen. Col. iii, 1856, p. 317; Deyr., Ann. Soc. Ent. France (5), iv, 1874, p. 455.

Cheirotonus, Hope, Trans. Linn. Soc. xvii, 1841, p. 594; Pouillaude, Insecta, 1913, p. 467.—Type, *C. macleayi*, Hope.

TYPE, *Scarabæus bimucronatus*, Pall. (Syria).

Range. S. China, Indo-China, Northern India, Syria, Constantinople.

The body is rather massively built, not narrow and elongated as in *Euchirus*, and the prothorax has a very irregular outline, its sides being more or less flattened, the posterior angles more or less spinose and the middle of the dorsal surface distinctly

channelled longitudinally; the male has the sides dilated in the middle. The front femur of the male is drawn into a point, directed upwards at the end and armed with a laminar tooth at the front edge; it is almost straight and subject only to slight elongation, unlike that of *Euchirus*; whereas the front tibia is very greatly elongated, has a strong inwardly-directed process at the end and another beyond the middle, and is sharply spinose externally. It may also bear internally an array of tubercles, as in *P. jansoni*, or a thick fringe of stiff hairs, as in *P. bimucronatus* and *davidi*. (In *Euchirus* it is without spines, processes or fringe.) There is no articulated spine or spur at the extremity of the front tibia in this sex. The organs of the mouth are as already described, but the mentum is short and transverse, and the maxillary teeth, which in *Euchirus* are strongly developed and very sharp, are either quite absent or reduced to blunt vestiges. The pygidium is vertical and concealed by the elytra.

The female is rather more elongate than the male, with the pronotum relatively narrower, the pygidium being oblique and protruding beyond the elytra. The front coxæ are almost contiguous, and the front tibiæ broad, acutely and irregularly toothed along the outer edge, but without internal processes; there is also a sharp articulated terminal spur. The hind tibia is dilated at the end. The clypeus is longer and more quadrate than in the male. In young specimens the front angles are sharp and the front margin almost straight, but this part, as well as the teeth of the front tibia, is very subject to wear, no doubt in the digging operations preceding the deposition of the eggs. In old specimens the clypeus may be completely rounded.

Variation in size is very great, especially in the males, and, as is invariably the case with such sexual features, the degree of development of the fore-legs is in exaggerated ratio to the size of the individual, so that in dwarfed specimens it is not very considerable. In very small males the anterior angles of the clypeus may be sharp and the shape of the latter approximate to that of the female—a part of the general gynandromorphism.

M. Pouillaude has recently described as new species four forms received by M. René Oberthür from different localities in the regions on the borders of the Indian Empire. Two of these are known to occur also within those borders and are represented in the British Museum. All four are evident local representatives of *P. macleayi*, differing by the shape of the front tibiæ of the male and by slight variations in the spotting of the elytra. Extremely few individuals of each have at present been examined, so that the constancy of these differentia has not yet been put to the test, but it may reasonably be anticipated that collecting in intermediate localities will reveal forms more or less linking together those distinguished by M. Pouillaude by these usually variable features only. A careful comparison of numerous specimens from many localities is really

necessary to determine the real status of the two insects here provisionally separated as *Propomacrus henrici* and *gestroi*.

Key to the Species.

1 (2) Pygidium clothed with short, close-lying hairs, long only at the extremity; elytra longer, with the widest part before the middle, the pale blotches confluent.	
♂. Clypeus very short; terminal process of the front tibia very long; femur with an acute tooth near the middle .	*parryi*, Gray, p. 369.
2 (1) Pygidium clothed with long erect hairs; elytra shorter, with the widest part behind the middle.	
♂. Clypeus longer; front femur with a triangular lamina in front.	
3 (6) Moderately broad and compact; pale blotches of the elytra scattered.	
4 (5) Elytra almost without pale longitudinal lines.	
♂. Anterior half of the front tibia strongly and abruptly curved, its terminal process shorter than the median process	*macleayi*, Hope, p. 373.
5 (4) Elytra with pale longitudinal lines.	
♂. Anterior half of the front tibia very gently and not abruptly curved, its terminal process rather longer than the median one..............	*henrici*, Pouill., p. 375.
6 (3) Very broad and compact; pale blotches of the elytra confused and often annular.	
♂. Front tibia very gently curved, its terminal process long	*gestroi*, Pouill., p. 374.

397. **Propomacrus parryi.** (Plate IV, fig. 41.)

Cheirotonus parryi, Gray, Trans. Ent. Soc. Lond. v, 1848, p. 59; Pouillaude, Insecta, 1913, p. 473, fig. 7.
Propomacrus parryi, Deyr., Ann. Soc. Ent. France, (5) iv, 1874, p. 447, pl. ix, figs. 4, 5, 6, & 10.

Deep coppery-green or coppery-red, with the elytra almost black, suffused with a slight metallic lustre, and decorated with numerous crowded irregular orange-yellow blotches and longitudinal streaks, more or less confluent, especially near the outer margins. The sternum is rather thickly clothed with short yellow hairs and the abdomen bears similar but still shorter hairs at the sides only. The pygidium is thinly clothed with short setæ, but the female has also a tuft of long hairs at the apex.

The body is rather elongate and very convex, with the head, pronotum and femora moderately shining, the elytra opaque and microscopically rugulose, broadest a little before the middle, with

the apical angles rather spinose. There is a minute tubercle at the middle of the front margin of the pronotum.

♂. The head is rugosely punctured, with the clypeus extremely short, extending very little in front of the eye-ridges, gently rounded in front, with the lateral angles not well-marked and the anterior face forming an obtuse angle with the upper margin; the upper surface is only moderately excavated. The pronotum is strongly transverse and very coarsely, deeply, and closely punctured, leaving only a very small, smooth, and shining space upon the posterior half on each side of the median groove; the latter is bounded at the front margin by a minute but rather sharp tubercle and widens in the posterior half into a somewhat oval depression; the lateral margins are sharply serrated, broadly dilated and flattened in the posterior half, and fringed beneath with closely-set erect yellow hairs. The front femur is armed with a sharp spiniform tooth about the middle of its anterior edge; the tibia is only very feebly curved and has a finely granular and opaque surface, with numerous irregularly scattered tubercles upon its inner side. There is a very strong sharp process projecting inwards and upwards at about two-thirds of the length of the tibia from the base and exactly opposite a minute tooth upon the outer edge, and the extremity of the tibia is produced inwards as a still longer process, which in small specimens is sharp, and in well-developed specimens blunt but hooked at the end. The pygidium is scantily clothed with short reddish hair, but has a bare median line.

♀. The head is entirely rugose, gently excavated, without a distinct ridge between the clypeus and forehead. The clypeus is not very long, its sides are convergent, the front margin rather straight and the angles sharp. The pronotum is closely and coarsely rugose, the punctures being almost obliterated, except in the immediate neighbourhood of the very small smooth shining area towards the base on each side; the anterior tubercle is blunt and divided behind. The tip of the pygidium carries a fringe of long hairs.

Length, ♂, 47–61 mm., ♀, 45–58 mm.; breadth, ♂, 25–33 mm., ♀, 23–29 mm.

Sikkim: Darjiling (*W. H. Bath*), Tukvar (*E. A. Möller*), Mungphu (*E. T. Atkinson*).

Types (♂ and ♀) in the British Museum.

Although the distinctness of this species from the previously described *P. macleayi* has been doubted, and the points of difference may seem at first sight to be unimportant, there is really no doubt as to their separateness, the distinctive features affecting nearly every part, so that it would be possible to determine to which species a specimen belonged from almost any portion of it. *P. parryi* is much less hairy and, accompanying an elongation of the hinder part of the body, there is a shortening of the head; in the male the mouth is placed at a different angle to the clypeus, so that the long protruding brushes of the maxillæ

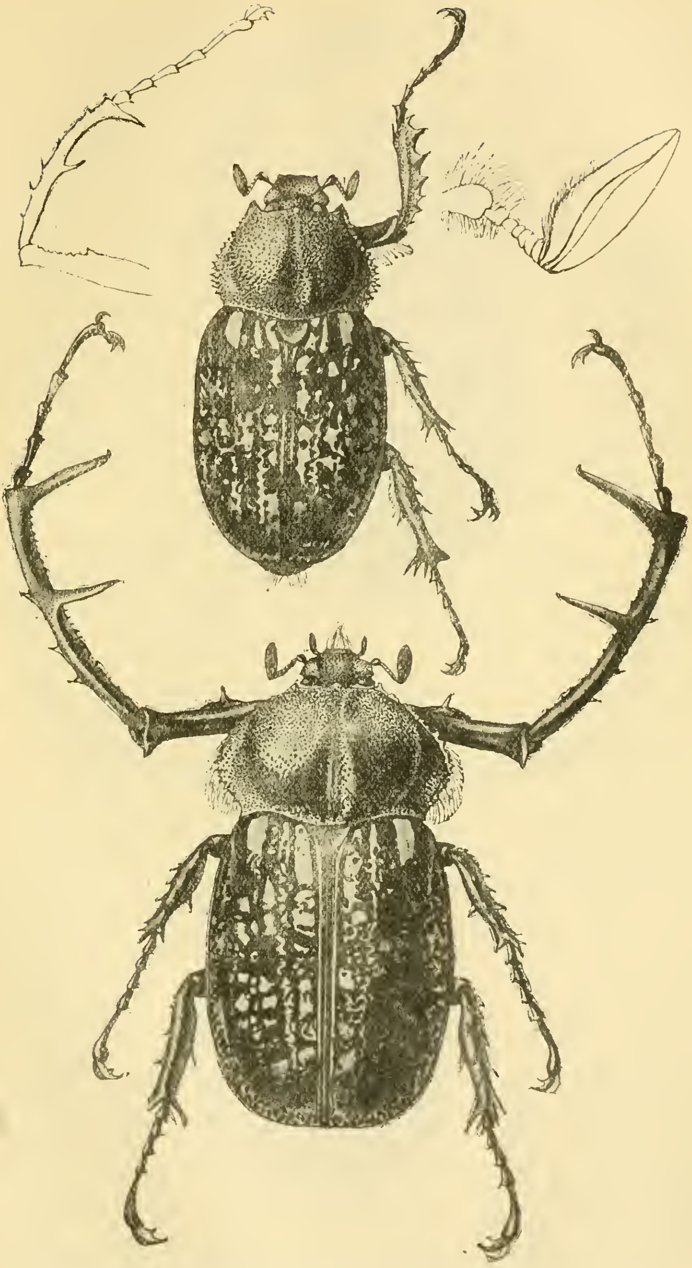

Fig. 76.—*Propomacrus parryi*, male (below) and female (above), with antenna (right) and front leg of *P. henrici* (left).

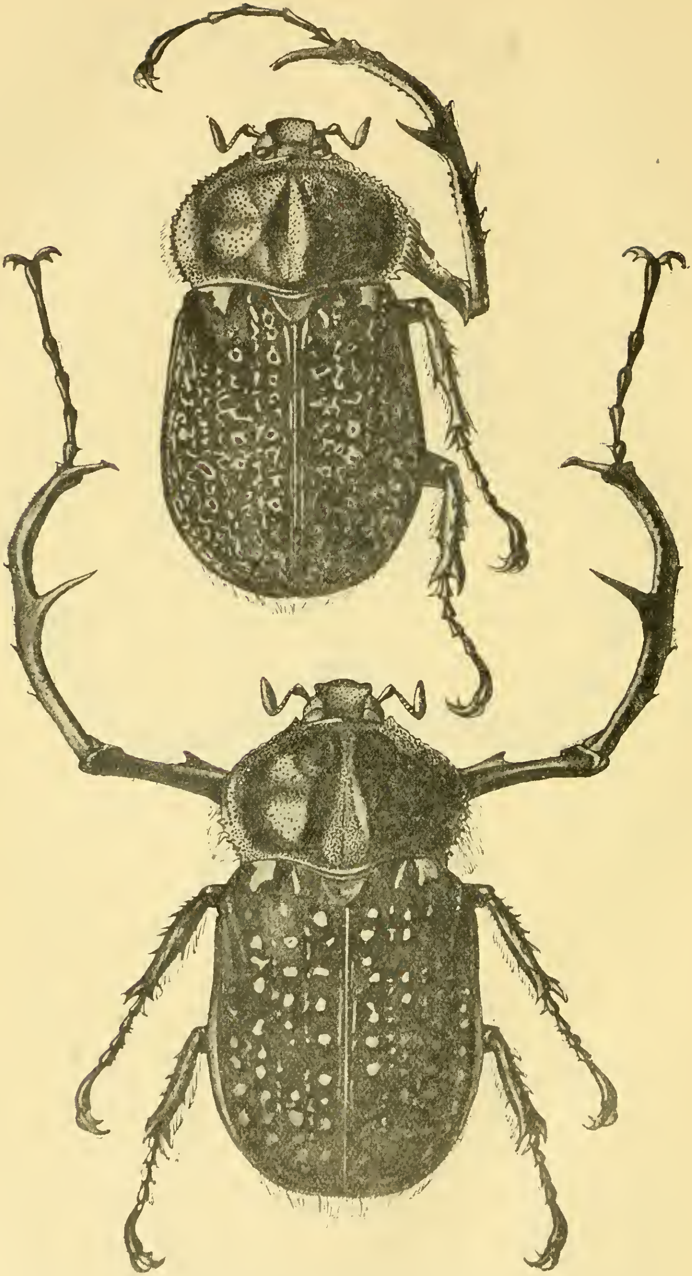

Fig. 77.—*Propomacrus macleayi*, male (below) and *P. gestroi*, male (above).

appear much more prominent, as seen from above. What difference in habits, if any, exists between the two species is unknown, no observation of any kind being recorded as to the present form, but it is remarkable that the two insects appear to live side by side in a part at least of the regions inhabited by them, more than one collector having taken both in the same locality. It is another noteworthy circumstance that whilst closely related offshoots, or representative forms, of *P. macleayi* are found in outlying districts, even so far away as Formosa (*P. gestroi* and *P. henrici*, of this work, being examples), *P. parryi* remains sharply circumscribed and isolated. I have been unable to find any authentic record of its occurrence elsewhere than in the Darjiling district. The two specimens from which the species was originally described by Gray were registered in the British Museum as having been collected in Sylhet, but as Gray records them only as from "Northern India," it is probable that he was not able to place full reliance upon that locality.

I am indebted to Mr. O. E. Janson for the loan of a considerable series of these two forms for the purpose of comparison.

398. **Propomacrus macleayi.** (Plate IV, fig. 42.)

Cheirotonus macleayi, Hope, Ann. Nat. Hist. vi, 1841 (1840), p. 300; id., Trans. Linn. Soc. xviii, 1841, p. 595, pl. 40, fig. 3 (♀); Parry, Ann. Mag. Nat. Hist. xviii, 1846, p. 315, pl. 3 (♂); Gray, Trans. Ent. Soc. Lond. v, 1848, p. 59; Pouillaude, Insecta, 1913, p. 468, figs. 3, 4, 5 *a*, & 6 *a*.
Eucheirus macleayi, Westw., Cab. Orient. Entom. 1848, p. 3, pl. i (♂ & ♀).
Euchirus macleayanus, Burm., Handb. Ent. iii, 1842, p. 702.
Propomacrus macleayi, Deyr., Ann. Soc. Ent. France, (5) iv, 1874, p. 446, pl. ix, figs. 7 & 11.

Deep coppery-red or golden-green, with the elytra almost black, suffused with a slight metallic lustre, and decorated wth irregular orange-yellow blotches, which are not very crowded and near the outer margins are rather small and scanty. The lower surface is thickly clothed, except at the middle of the abdomen, with long yellow hair, which is also long and conspicuous upon the pygidium.

The body is rather massively built, very convex and only slightly elongate. The head, pronotum, and legs are shining, and the elytra smooth but opaque and microscopically rugulose, a little dilated behind the middle, with the apical angles slightly spinose. The front margin of the pronotum is rounded and minutely indented in the middle.

♂. The head is coarsely pitted, with the clypeus moderately long and divided from the forehead by a distinct ridge, in front of which it is rather abruptly excavated; the front margin is strongly reflexed, slightly prominent in the middle, with the outer angles distinct but not sharp (except in small specimens), the anterior

face forming an acute angle with the upper surface. The pronotum is transverse, very convex, with a longitudinal median groove, which dilates behind the middle into a broad, rather triangular depression. In this, and at the sides and near the hind margin, it is very strongly and closely punctured—elsewhere it is scantily punctured and very smooth and shining, with a broad shallow impression on each side before the middle. The lateral margins are sharply serrated, broadly rounded in the posterior half, moderately flattened, and fringed beneath with long and very thick yellow hair, which is conspicuously visible from above. The front femur is armed with a broad angulated lamina; the tibia is rather smooth and shining in its anterior part, where it is very strongly curved, the extremity being produced into a sharp but not very long process, barbed just before the tip. Near the middle of the inner edge, at the point where the curvature of the anterior part of the tibia abruptly begins and midway between two of the minute teeth upon the outer edge, there is a longer acute process projecting inwards and upwards. The pygidium is clothed with long and thick yellow hair.

♀. The head is rugosely punctured, with the clypeus deeply excavated, moderately long, with its front edge nearly straight and sharp-angled on each side. The pronotum is deeply, coarsely and closely punctured, rugosely at the front and sides and in the median channel, with a perfectly smooth shining area towards the base on each side. The pygidium is clothed with long yellow hair on each side.

Length, ♂, 46–68 mm., ♀, 50–57 mm.; breadth, ♂, 25–37 mm., ♀, 25–30 mm.

SIKKIM: Darjiling (*Desgodins*), Tukvar (*E. A. Möller*), Kurseong (*Brétaudeau*); BHUTAN: Padong (*L. Durel*); ASSAM (according to Hope).

Type (a female) in the Oxford University Museum.

399. Propomacrus gestroi. (Fig. 77.)

Cheirotonus gestroi, Pouill., Insecta, 1913, p. 471, figs. 5 *d*, 6 *d*.

Golden green, with the elytra almost black, suffused with a slight metallic lustre and decorated with rather crowded yellow blotches of very irregular shape, the larger ones generally havin a black spot in the centre. It is clothed with long and thick pale yellow hair upon the sternum, the sides of the abdomen and the pygidium.

It is short, very compact and convex in shape. There is a very minute sharp prominence at the middle of the front edge of the pronotum.

♂. The head is shining and deeply but not closely punctured, with the clypeus deeply excavated, the front angles blunt, the margin nearly straight and the anterior face forming an acute angle with the upper surface. The pronotum is broad and very convex, with a longitudinal groove, which dilates behind the

middle into an oval depression. In this depression, and at the sides and base, it is very strongly and closely punctured—elsewhere it is scantily punctured and very smooth and shining, with a shallow impression on each side before the middle. The lateral margins are sharply serrated, moderately flattened in the posterior half and broadly rounded, with a fringe of long and very dense hairs beneath. The front femur is armed with a broad, bluntly angulated lamina and serrated between this and the extremity; the tibia is gently and almost uniformly curved, its extremity being produced into a long pointed process, with a tooth near the middle of its upper edge, and armed with another sharp-pointed process shorter than the terminal one, near the middle of the inner edge and midway between two of the minute teeth of the outer edge.

I have not seen a female.

Length, 63 mm.; breadth, 35 mm.

Assam: Kohima, Naga Hills, 4000 to 5000 ft. (*H. C. Tytler*); Burma: Karen Hills (*D. Tornatore*); Shan States, Mussur Hills, Chieng-Sen (according to Pouillaude).

Type in M. René Oberthür's collection; co-types in the Genoa Museum.

400. **Propomacrus henrici.** (Fig. 76, fore-leg of male.)

Cheirotonus henrici, Pouill., Insecta, 1913, p. 472, figs. 5 *c*, 6 *c*.

Brilliant metallic green, with the elytra almost black, suffused with a slight metallic lustre and decorated with not very crowded irregular orange-yellow lines and blotches, the latter almost as in *P. macleayi*. The lower surface is thickly clothed with long pale yellow hair, which is also long and conspicuous upon the pygidium.

The body is compact, convex, and not very elongate; the head, pronotum and legs rather shining, and the elytra opaque and microscopically rugulose, a little dilated behind the middle, with the apical angles slightly spinose. The front margin of the pronotum bears a minute tooth in the middle.

♂. The forehead is rather finely punctured, and the clypeus coarsely, the latter moderately long, deeply excavated and divided from the forehead by a well-marked ridge; the front margin is strongly reflexed and the anterior face forms an acute angle with the upper surface. The pronotum is transverse and very convex, with a longitudinal groove, which dilates from before the middle into a very broad triangular depression. In this depression, as well as at the sides and near the base, it is coarsely and rugosely punctured, leaving only a small smooth and shining area on each side of the posterior depression. The lateral margins are sharply serrated, strongly dilated and flattened behind, and greatly retracted before the base, with a fringe of very long yellow hairs beneath. The front femur is armed with a broad sharp-pointed lamina and serrated between this and the extremity; the tibia is

gently and almost uniformly curved, being produced into a long pointed process at the extremity and armed with another sharply pointed process, shorter than the terminal one, near the middle of the inner edge and midway between two of the minute external teeth.

The female scarcely differs from that of *P. macleayi*, except that the median channel of the pronotum is broader behind and the yellow markings of the elytra are rather more abundant, especially near the sides, as in the male.

Length, 48–64 mm.; breadth, 27–37 mm.

BURMA: Ruby Mines (*W. Doherty*); ASSAM: Manipur (*Doherty*); TIBET: Tsekou (according to Pouillaude).

Type in M. René Oberthür's collection.

Although the original description is rather inadequate, I believe the specimens (male and female) taken by Doherty (the former a rather small example from which the outline of the front tibia in fig. 76 is drawn) to belong to *P. henrici*. The elytra in these two specimens are rather more opaque than in most specimens of *P. macleayi*, but this may be accidental.

APPENDIX.

Descriptions are added here of a few new species received while the preceding pages were in the press, and too late for inclusion in their proper places.

28 *a*. **Popillia kanarensis**, sp. nov.

Deep metallic green or coppery, sometimes with the elytra testaceous, suffused with metallic lustre, and decorated with a dark patch round the scutellum, a spot on the humeral callus and a patch on the apical callus.

It is very smooth and shining above and rather closely clothed beneath, except along the middle line, with long erect white hairs, which also form two rather loose outstanding tufts at the base of the pygidium. A very few erect hairs can sometimes be traced in the marginal grooves of the pronotum.

The form is oval and convex. The head is finely rugose, with the clypeus narrow, triangular, bluntly produced and strongly reflexed at the apex, the forehead lightly depressed along the middle and the vertex strongly punctured. The pronotum is very smooth, with a few fine scattered punctures. The sides are nearly straight in front and behind, the front angles slightly acute, the hind angles very obtuse and the base broadly emarginate in the middle. The scutellum is broadly triangular and bears a few fine punctures. The elytra bear five deep, strongly punctured dorsal grooves, with smooth convex intervals, the subsutural one having a few coarse punctures at the base. The pygidium is strongly transversely rugulose. The mesosternal process forms only a slight pointed prominence before the middle coxæ. The front tibia is armed with two very strong oblique teeth and the longer front claw is very deeply cleft.

♂. The inner lobe of the longer front claw is very broad and blunt, and the middle claws are long and entire.

♀. The longer middle claw, as well as the front one, is cleft.

Length, 9·5–11·5 mm.; breadth, 5·5–6·5 mm.

Bombay: N. Kanara, Talewadi, near Castle Rock (*S. Kemp*, Oct.).

Type in the Indian Museum, Calcutta; co-types in the British Museum.

This is a second species with the peculiar pointed clypeus of *P. nasuta*, to which it is very closely related. It differs especially in having the customary pair of tufts of white hairs at the base of the pygidium, which are absent in *P. nasuta*. The hairs are long, outstanding, and not closely set, and the clothing of the lower surface of the body differs from that of *P. nasuta* in being longer, and erect instead of decumbent. The colour is also different from that of the allied species. Of eight specimens the two females are deep metallic green, with a slight rosy tinge, while the males have the head, pronotum, pygidium and lower surface coppery-red, three of them with the elytra of the same colour and the other three having them testaceous, with a metallic suffusion and marked with dark patches as described. Structurally the two species are almost alike, but a strongly marked difference exists in the mesosternal process, which is very much shorter in the new species.

Taken with the eight specimens above described, at the same time and place, are three females identical in form and colour with the two females of *P. kanarensis*, but really belonging to *P. nasuta*. The mesosternal process is long, the pubescence of the lower surface short and close. These specimens, however, show some degree of approach to *P. kanarensis*, the pubescence not being quite decumbent and the pygidial tufts being represented by two or three minute inconspicuous hairs on each side. The examination of more numerous specimens of these forms is necessary to obtain light on the very interesting problem suggested by them.

110 *a*. **Mimela pusilla**, sp. nov.

Light chestnut-red above, with a slight metallic crimson lustre upon the anterior part, and the metasternum, abdomen (except the extremity), the inner side of the tibiæ and the tarsi very dark metallic green. The antennæ are pale with a dark club.

It is a small, rather shortly ovate and not very convex insect, moderately smooth and shining, and thinly clothed beneath with grey hair. The clypeus is rugosely punctured, nearly straight in front and not very short; the eyes are prominent and not very small, and the forehead and vertex are rather strongly but not closely punctured. The pronotum is very finely and sparingly punctured, a little more strongly at the sides; the front angles are acutely produced, the sides gently rounded, the hind angles nearly right angles and the base finely margined. The scutellum is very minutely punctured, and the elytra are rather strongly punctured, with two well-marked pairs of dorsal lines and wide irregularly-punctured intervals. The pygidium is strongly punctured. The mesosternum is not produced. The front tibia is bidentate, with the upper tooth feeble; the hind femur is very thick and the hind tibia stout.

♂. The club of the antenna is nearly twice as long as that of the female.

♀. The terminal tooth of the front tibia is very long.

Length, 10–12·5 mm.; breadth, 6–7 mm.

United Provinces: W. Almora, Ranikhet (*H. G. Champion*).

Type in the British Museum; co-types in the Oxford Museum and in Mr. G. C. Champion's collection.

I have seen seven males, but only a single female. The latter (a specimen in the Hope Department of the Oxford Museum, taken by Capt. Boys, but without recorded locality) differs from all the males in the tibiæ being entirely pale, but that is probably only an individual peculiarity.

The species is a remarkably small one, closely related to *M. bicolor*, Hope, but less compact and convex and much more strongly punctured upon the elytra and pygidium. The colouring of the legs and upper surface is different, the eyes are rather larger, the front angles of the thorax more produced, and the club of the antenna of the male is longer.

163 *a*. **Anomala vestigator**, sp. nov.

Pale testaceous-yellow, with the head, the pronotum (except broad lateral margins), the hind tibiæ, the extremities of the front tibiæ and all the tarsi red, and with an exceedingly feeble metallic lustre upon the posterior part of the head and the pronotum.

It is oval and convex in form, not very shining, and inconspicuously clothed with short, erect, pale hair beneath. The head is strongly and closely punctured, with the eyes very large and prominent and the clypeus very narrow but not short, the sides parallel and the front margin rounded and strongly reflexed. The pronotum is very convex, rather closely punctured, strongly rounded at the sides, with all the angles very blunt and the base completely margined. The scutellum is well punctured, and the elytra bear five fairly well-marked dorsal striæ, with the intervals convex and rather closely punctured, the subsutural one broad: the membranous margins are well developed. The pygidium is finely, but rather rugosely, punctured and bears a few scattered hairs. The front tibia is armed with two very strong and sharp teeth, and the hind tibia is short and stout and very broad at the extremity.

♂. The longer claws of the front and middle feet are very minutely cleft at a distance from the tip, the longer front claw is dilated and bent, and the shorter one is rather broad but very acute at the tip. The club of the antenna is very long.

♀ unknown.

Length, 15 mm.; breadth, 7 mm.

N.W. Frontier Province: Peshawur District, Tarnab (*T. Bainbrigge Fletcher*, May).

Type in the British Museum; co-type in the Pusa Research Institute.

This species is closely related to *A. macrophylla*, Wied. It is a little more shining and less strongly punctured, the elytra and the sides of the pronotum are paler, the former less deeply striated, and the two teeth of the front tibia are placed farther apart. The claw structure is peculiar. The longer front and middle claws have each an exceedingly fine and inconspicuous incision upon the upper edge at a distance from the tip (in the front foot it is almost at the middle of the length of the claw) and the minute branch so produced is so delicate that it is very liable to be broken off. The female will probably be found to differ considerably from the male.

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All names printed in italics are synonyms.

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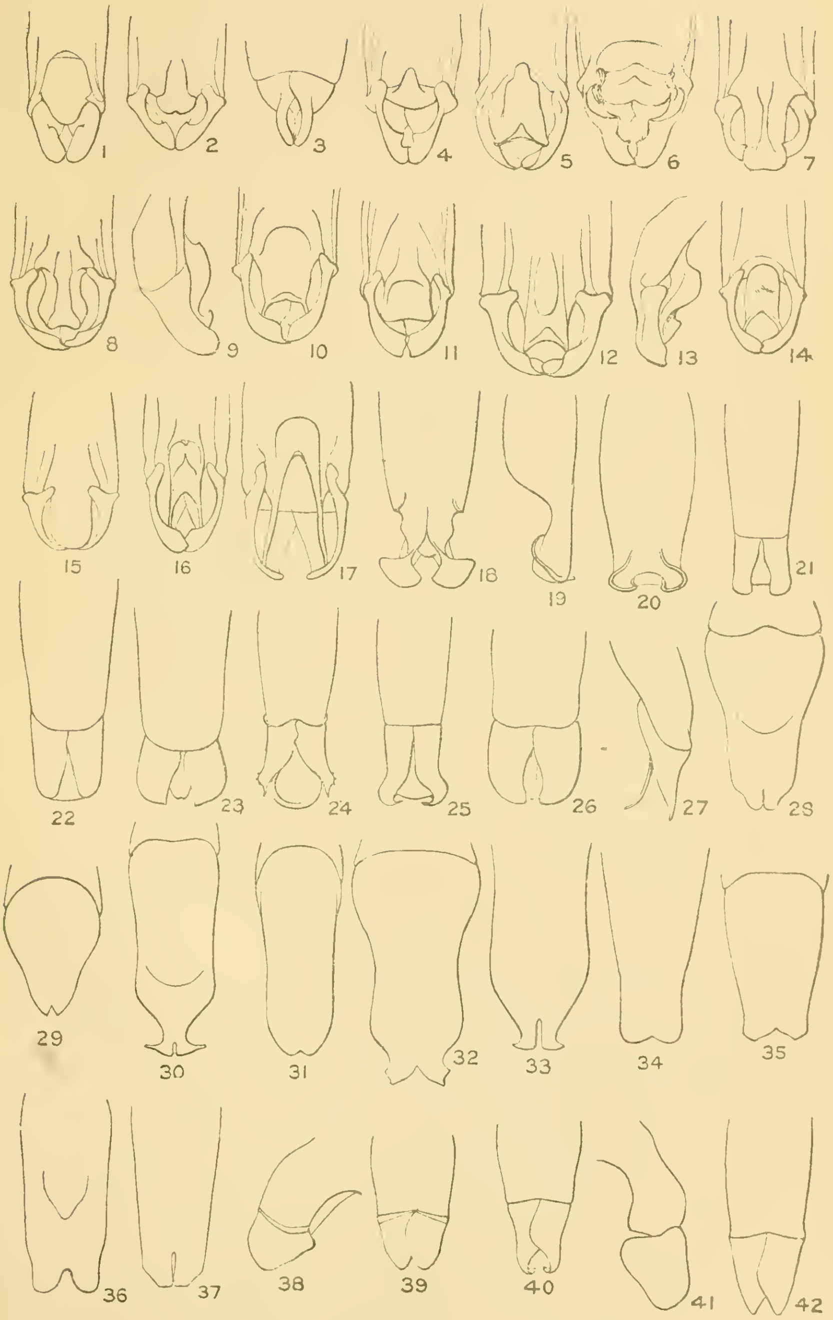
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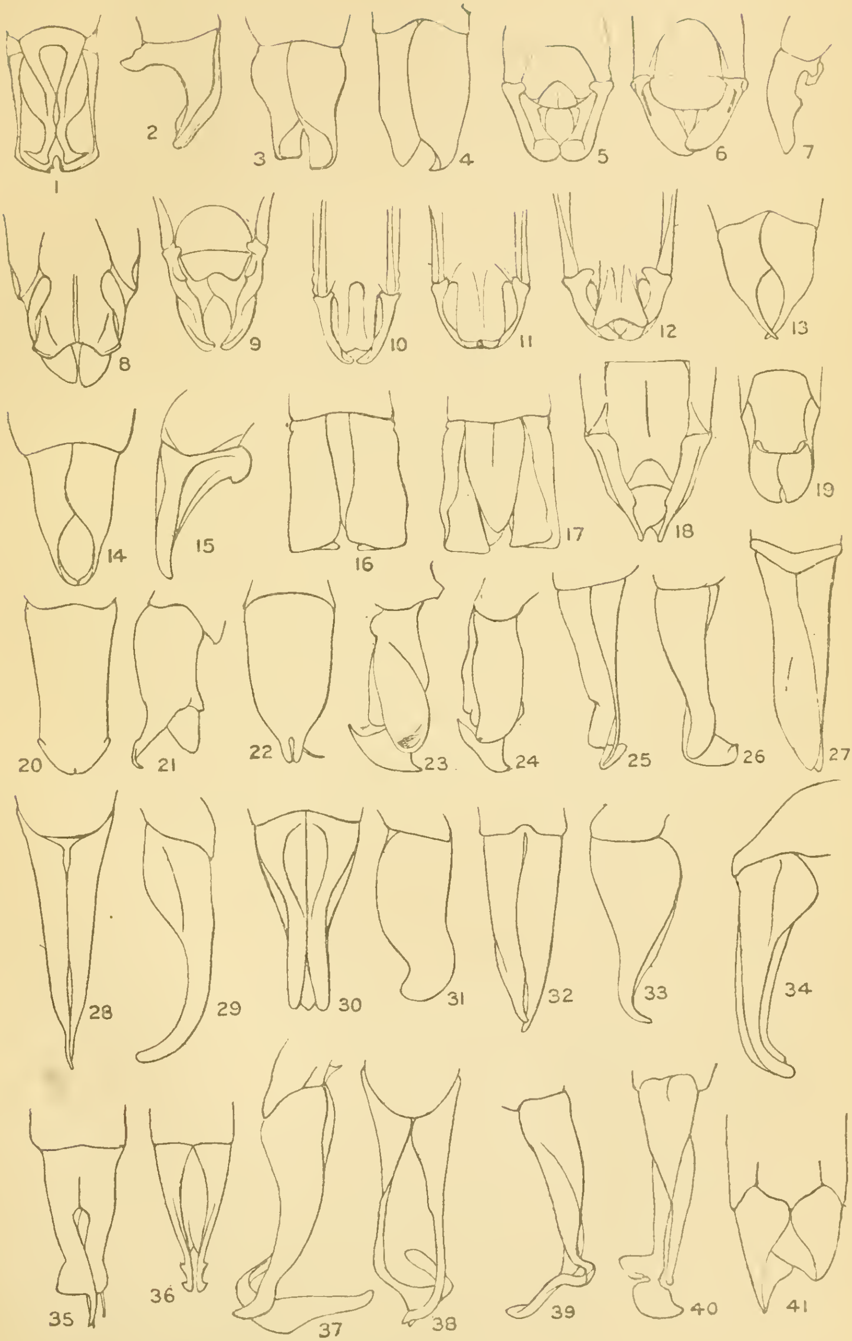
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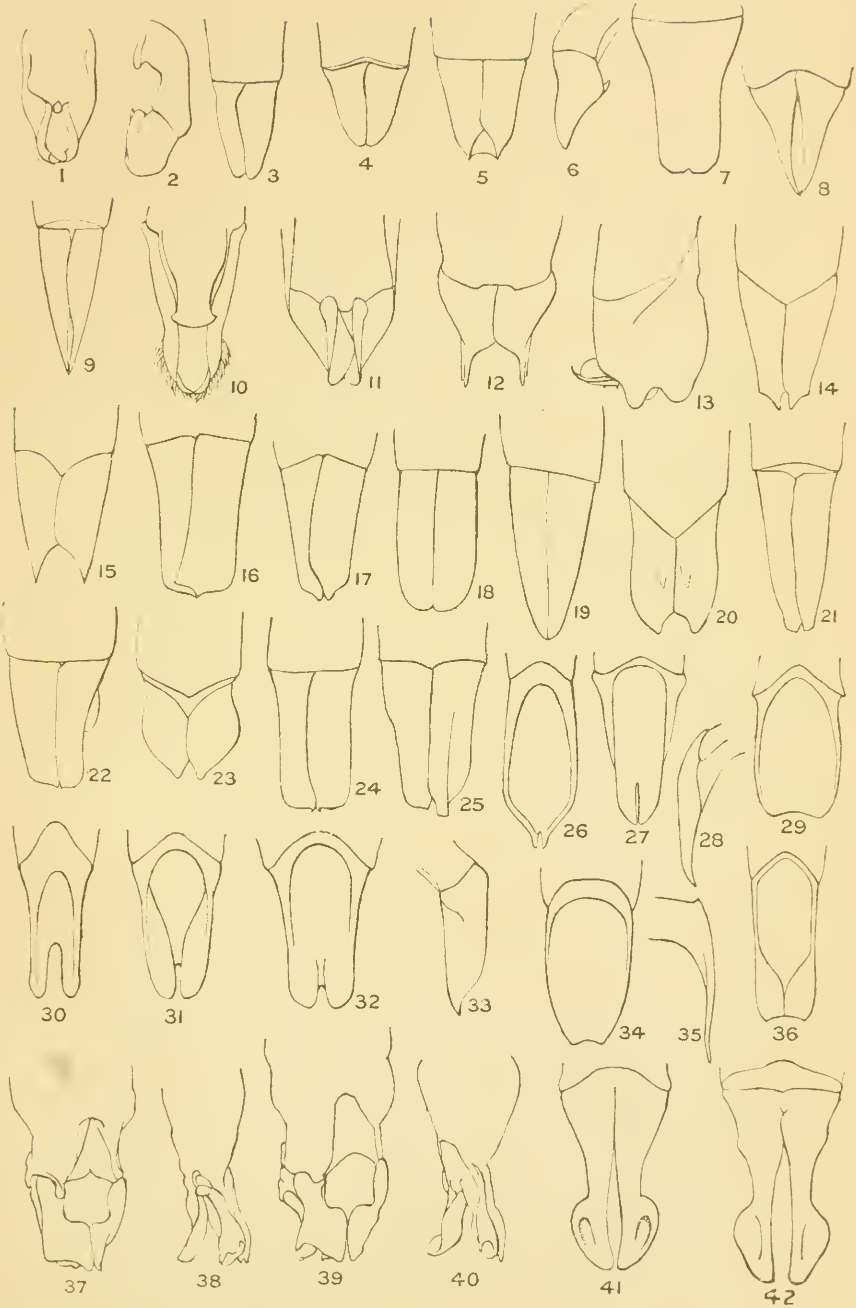
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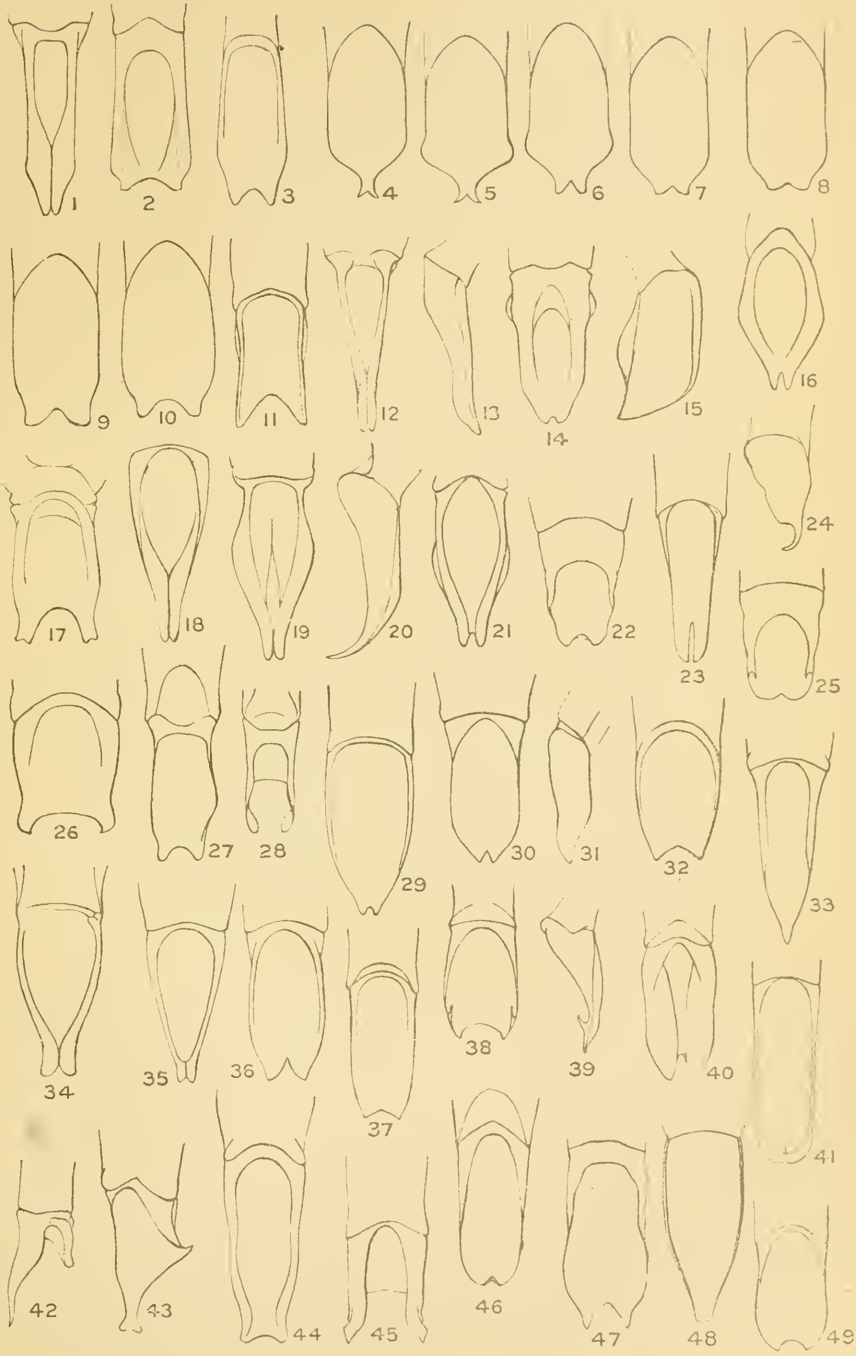
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